

Western Industry

July 1957

Vol. XXII
No. 7

The West wants, and needs, a big new broad-scope equipment trade show!

SPECIAL EDITORIAL, PAGE 7



O. M. Bell: "Limitless horizons for engineers in management."

In The West

Trend is to Engineers as Top Managers

LOS ANGELES, July 12—"The increasing proportion of top management positions being filled by engineers is one of the most important trends in industry today," said a Western engineer-manager in an exclusive interview reported in the July issue of *Western Industry*.

The many reasons why this trend is of tremendous significance to both large and small manufacturing concerns are detailed by O. M. Bell, young (30) engineer and president of ~~Spurred~~ Air Products Corp., Los Angeles.

In Bell's opinion, younger engineers with management aspirations and the proper qualifications can now "almost write their own tickets."

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Published monthly by
KING PUBLICATIONS
609 Mission Street
San Francisco 5, Calif.
Phone YUkon 2-4343

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Subscription rate: \$10.00 per year.
Cost per single copy: \$1.00

Accepted as Controlled Circulation Publication at Los Angeles, California. Postmaster: Please send Notice 3579 to Western Industry, 609 Mission Street, San Francisco 5, California.

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The Essential Publication for Manufacturing Management in the New Industrial West

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A



B



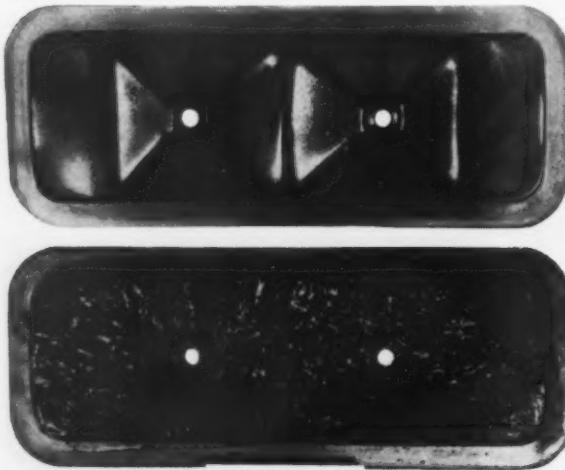
C



D

Using RPM SUPREME Motor Oil for 33,000 stop-start miles of low-temperature driving, engines of Veterans taxicabs showed average cylinder wear rate of only .0002" per 10,000 miles! Note excellent condition of piston A from typical engine using RPM SUPREME—all rings free, no clogging of oil ring

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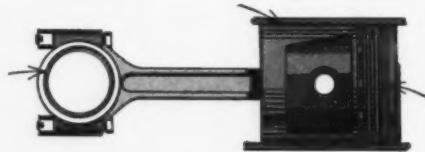


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WESTERN INDUSTRY — July 1957

The West wants, and desperately needs, a big new broad-scope equipment trade show!

NOWHERE IN THE U. S. TODAY are industrial equipment trade shows so keenly needed as in the West—and brother, *have we got 'em!* By year's end, 1957, we will have had at least *one hundred separate shows* at points up and down the Pacific Coast and east to the Rocky Mountains. Unfortunately, the great majority are local affairs, sponsored by civic groups or local technical society chapters and staged in hotel ball-rooms or small edge-of-town meeting halls—low in attendance, limited in value to the men who come to learn, hard on the budgets of exhibitors. A few of the larger ones are "all-Western" in name and prospectus; only two or three *specialty* shows deserve this description.

It is an inescapable certainty that *no single existent Western trade show, or any grouping of the conglomerate of local shows, is satisfying the pressing needs that Western plant operating executives have today* for working knowledge of a broad range of industrial equipment and materials.

Their needs will be met *only* with the initiation of a *single, big, boldly conceived and imaginatively executed WESTERN INDUSTRIAL EQUIPMENT EXPOSITION, so broad in scope that it will demand the attention and attendance of one hundred thousand plant operating executives from every portion of the sprawling new industrial West!*

This big Exposition will prove to be the *only means* for satisfying perennial problems that now plague Westerners. Seldom is it possible for Western manufacturing managers and supervisors to attend Eastern shows (the travel requires too much time and money, and that's why only a consistent 2 or 3% of the registration at these shows is from the West, far below the proportion of industrial activity represented by the West.) In addition, Westerners have difficulty obtaining full value from Eastern shows simply because many products displayed are not marketed or serviced adequately in the West.

Distances *within* the West create a real problem even for shows here (with Salt Lake City, at the midpoint of the West, as far from San Francisco as Chicago is from New York.)

No need to remind you too that the typical Western plant is a small one, with travel of 1,000 mi. or more (Portland to Los Angeles, or Denver to San Francisco) often prohibitively expensive.

Intensifying the problem is this fact: in the new, almost-new and recently expanded plants that predominantly characterize the new industrial West, first-generation management and supervisory men *typically do not yet have adequate knowledge of the hundreds of different types of products needed for successful and profitable plant operation.*

Local shows, with few displays and limited scope, are not satisfying these needs. Nor are the few big specialty shows that display equipment and materials common only to certain types of manufacturing plants (i.e., WESCON, and the Western Metal Exposition), or to specific operating functions within manufacturing plants (electrical maintenance or material handling, for example.) In the thousands of small and medium sized Western plants, the interests of plant management men are far broader than is represented by the limited range of equipment exhibited at these shows. Even in the few truly large Western plants, the typical plant operating executive is responsible for many types of equipment never exhibited at any existing Western shows.

Only the big WESTERN INDUSTRIAL EQUIPMENT EXPOSITION will satisfy all of these special needs that Western industrial men have. The Exposition ideally will have many hundreds of exhibits displaying the entire range of equipment and materials needed for successful plant operation—from new magnetic tape control systems and computers to air conditioning systems and waste control equipment, from industrial power equipment of all types to fasteners and lubricants, from lift trucks to common hand tools, from (you name it, Mr. Western Plant Operating Executive!)

Backing up the giant Exposition should be all of the West's broad-gauge industrial technical societies, who would arrange a concurrent series of conferences providing great additional values for the men who will be attending from all over the West. Active in the conference would be the Western chapters of such societies as the American Institute of Plant Engineers, the Society for Advancement of Management, the American Material Handling Society, the American Institute of Industrial Engineers, the National Association of Power Engineers, the Society of Industrial Packaging and Material Handling Engineers, the Electrical Maintenance Association, the Institute of Management Sciences, and (yes) the Executive and Technical Women of Industry. (Good precedent for the desirability and workability of this conference plan is provided by the Western Metal Congress, arranged by dozens of Western technical societies to take place during the Western Metal Exposition.)

The WESTERN INDUSTRIAL EQUIPMENT EXPOSITION is needed now! Now is the time for many bold and imaginative men to move toward making it a reality—by 1958!

THE NEXT STEP? ... YOU CAN HELP!

YOUR VOTE in favor of the broad-scope Western Industrial Equipment Exposition will help to make it a reality! In either the October or November issue of **Western Industry**, we will present all of the opinions received to that date, and a tabulation of votes representing these opinions from many sources (potential manufacturer exhibitors, Western distributors, and Western plant operating executives who

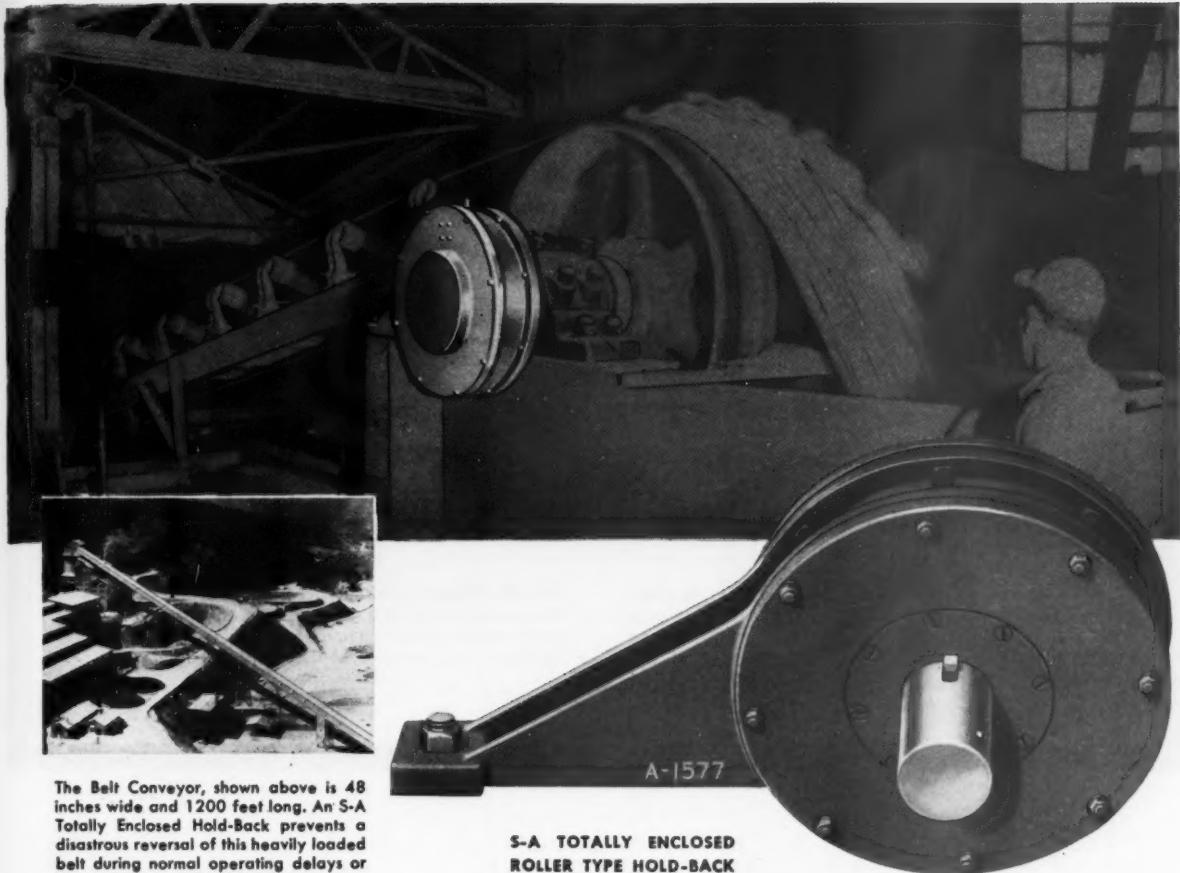
would attend the Exposition.)

Best of all, tell us your opinion and vote in a note to: Editor, **Western Industry**, 609 Mission St., San Francisco 5, Calif. **Next best**, register your vote on this month's Reader Service Postcard (page 85), as follows:

"Strongly in favor of the big Exposition soon," circle No. 338; "Might be a good thing," circle No. 339; "Do not believe it would do much good," circle No. 340.

The idea for the Western Indus-

trial Equipment Exposition at this point is entirely the creation of the editors of **Western Industry**. No technical society mentioned above is responsible in any way for the statements made in our editorial. Nevertheless, right now we release the Western Industrial Equipment Exposition and Conference idea to all interested Western chapters of technical societies, and to any professional show management firm that has the foresight, courage and perseverance needed for its speedy and successful development!

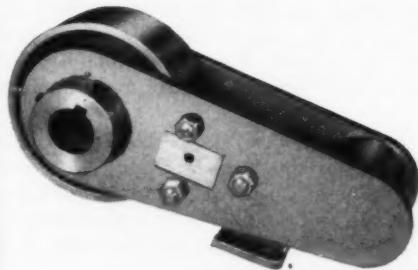


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WESTERN INDUSTRY — July 1957

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Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

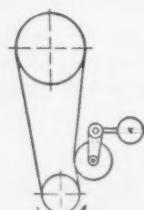


Fig. 10

LETTERS

IT'S STILL "BLACK AND WHITE" ON WATER CONDITIONING GADGETS

In recent months, we have printed quite a few opinions concerning the efficacy of mechanical water conditioning gadgets on the market today (November 1956 and February 1957 issues.) In a February 1957 editorial, we commented on the complete division of the opinions, with "both protagonists and antagonists inflexibly opinionated." Additionally, we recommended that a complete and authoritative study be made by a completely unbiased scientific research team. No such research program has yet been initiated, although we do know of one consulting engineer who is conducting an impartial test. Two more letters that arrived too late for inclusion with the collection appearing in the February issue are reproduced below. Again, they show an even split—one "black," one "white."—Ed.

THE WHITE: "Seeing is believing . . . they work"

EDITOR—We have two large boilers and the steam from them is used to operate six large cookers in our rendering plant. In August 1956 we installed a 1½-in. Packard water conditioner on our 200 hp. KC Hedges Scotch-type fire tube boiler which operates at 125 lb. of head pressure. There was approximately ¼ in. of hard scale build-up on the tubes. During the first 60 days we opened the boiler at two-week intervals and each time removed a five gallon bucket of scale.

Seeing is believing . . . and so we installed another 1¼-in. unit on our second boiler. It is a 150-hp. boiler with 100-lb. head pressure, and now our second unit is performing in the same miraculous manner as the first unit. Our once corroded boilers are now in good condition, the old scale has been removed and there is no scale build-up.

The conditioner has cut our maintenance costs considerably.

VERNON LINN
Plant Superintendent, Western California Products Co., San Francisco.

... continued on page 14

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- CREATE THE WONDER OF AUTOMATION

Denison Hydraulic Units Put the Lift in Widely Used Lift Slab Construction Page 3

Hydraulic Press Versatility Speeds Production for Musical Toy Manufacturer Page 6

West Coast Electronics Manufacturer Simplifies Assembling, Doubles Production With Multipress Installation Page 9

Drilling Rig Adapted for Work-over Service with Hydraulics Page 10

Assembling on Hydraulic Press Saves Specialty Manufacturer 11¢ Per Unit Page 12

West Coast Branch Serves a Growing Area Page 14

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LETTERS

... continued
from page 12

THE BLACK: "Gadgeteers don't know any better"

EDITOR—There is nothing mysterious about the water conditioning gadgets, in fact there is nothing mysterious in nature. It is simply that there are many things we do not understand.

After testing the water before and after going through one of these gadgets and finding that nothing had been changed, then analyzing the material of which it was made by all known methods and finding only ordinary cast iron and zinc, one man remarked sarcastically "if this thing will do anything to water so will an ordinary cast iron fitting."

Without knowing it, he hit the nail squarely on the head. An ordinary cast iron fitting will. It isn't even necessary to use cast iron.

A poll of the plumbers of the U. S., asking them whether they have ever had trouble with scale shortly after changing a portion of an old water pipe line, installing a water heater or water softener, will bring forth thousands of instances where this has happened. The scale in pipes, water heaters, boilers and tanks comes loose, causes leaks, clogs valves and otherwise gives trouble. We know of one instance where buckets of scale came out of a water heater and tank. Only a section of leaking pipe and some fittings had been replaced.

Plumbers frequently advise people not to install a water softener in an old house because "the water lines begin to leak." If this happens after a softener is installed, it's the soft water; if it happens after a new water heater is installed, it's just the old pipes.

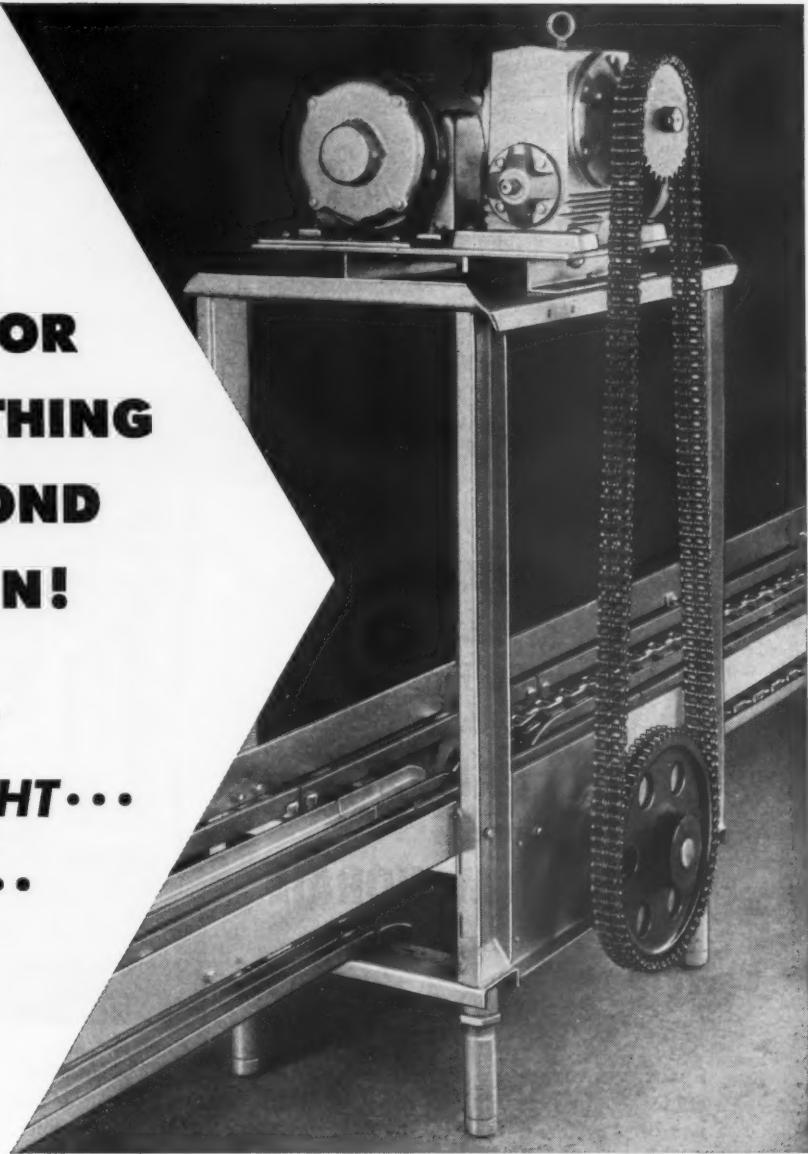
That it couldn't possibly be the soft water is proved by the fact that leaks start shortly after the softener is installed. This would mean that the scale is dissolved very rapidly and would show up as hardness in the softened water. The soft water, however, tests zero hard, completely disproving the theory that it dissolves scale. The writer has boiled soft water in a scaled tea kettle over a period of three years without appreciably removing, softening or changing to scale in any way.

It is probable that scale deposits are caused by the fact that the container (pipe, tank or boiler) and the calcium ions in the water have opposite charges of electricity, one negative, the other

... continued on page 20

FOR CONVEYOR DRIVES—NOTHING BEATS DIAMOND ROLLER CHAIN!

POSITIVE...
LIGHT WEIGHT...
LONG LIFE...
FLEXIBLE...



● On this model of a Cherry-Burrell Case Conveyor, the power drive is located some distance above the conveyor shaft. On others the drives may be shorter or located below the shaft. In any case the Diamond Roller Chain assures non-slipping power transfer in the most practical and economical manner.

Gears would require more bulk and weight, with costly shafts and bearings.

Belts for this kind of application cannot provide the accuracy of conveyor movement and timing.

Diamond Roller Chains are highly flexible in application. Their *light weight* in relation to power

transferred helps improve machinery design. The efficiency of Diamond Roller Chains cannot be matched by any other method of power transmission.

Diamond Application Engineers have sixty-seven years of experience to draw from in making recommendations. This experience is available to help solve your drive problems. No obligation of course.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

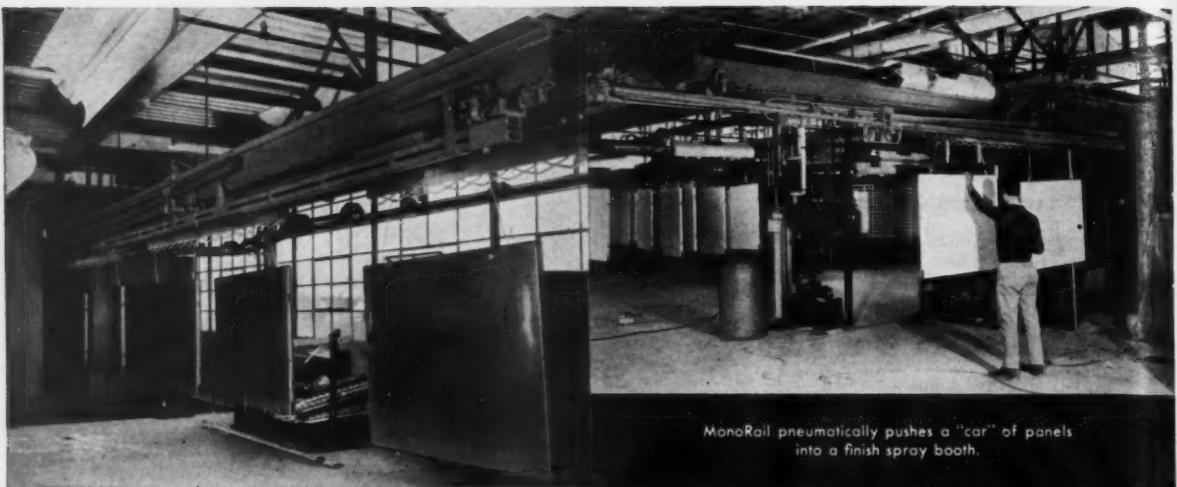
Dept. 606, 402 Kentucky Ave., Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND  **ROLLER CHAINS**

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Landahl picks up panels as MonoRail pushes them from degreasing.

MonoRail pneumatically pushes a "car" of panels into a finish spray booth.

Automatic Finishing
with
Power LANDAHL
and
AMERICAN MONORAIL



Finished panels are pushed by MonoRail from the bake oven.

Space was saved and automatic finishing achieved by combining two overhead handling systems.

American MonoRail cars carrying metal panels move through degreasing, priming, finishing and baking. In each operation either loading or unloading is performed automatically by power — the Landahl Chainless Conveyor acting as a "pusher" over most of the system.

Here is "team work" engineering to take advantage of the flexibility of both American MonoRail and Landahl Chainless Conveyors.

This efficient system is installed at Fostoria, Mfg. Co., Fostoria, Ohio, for finishing metal panels for office partitions.

For details on how American MonoRail or Landahl Conveyors can cut your handling costs, write today.

Member of The Materials Handling Institute, Inc. & MonoRail Manufacturers' Association.

For Power Driven Conveyors, Use Landahl Chainless Conveyors



AMERICAN
MONORAIL
COMPANY

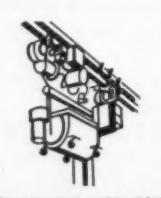
13117 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

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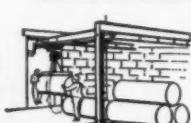
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McMahon Bros., Inc.
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AUTOMATIC DISPATCH



STACKER CRANE

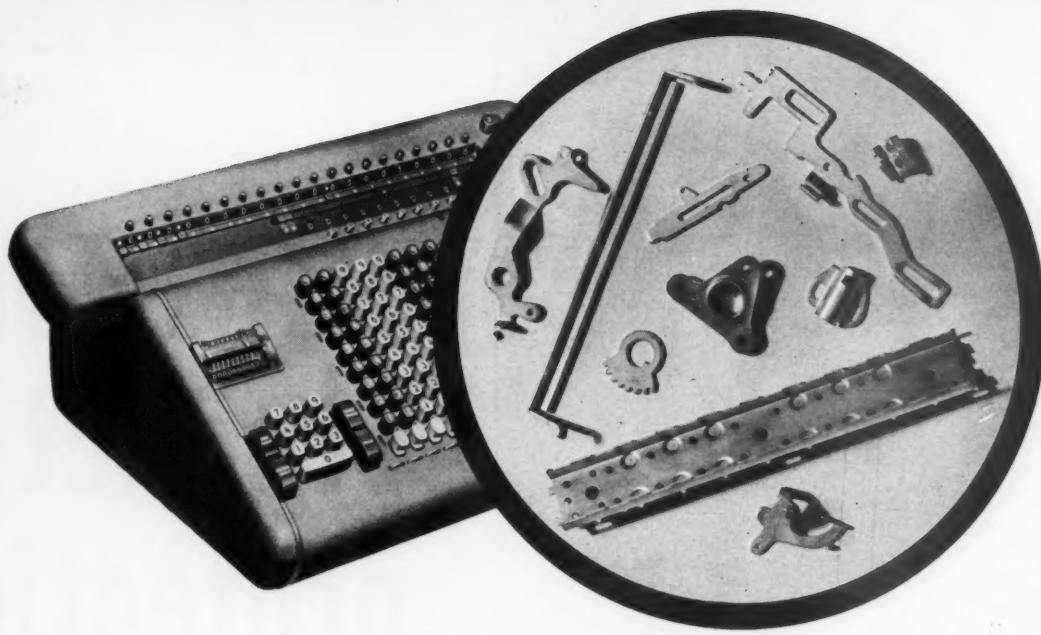


MANUAL MONORAIL



RETRACTABLE CRANE

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When spec's call for close tolerances...

WESTERN MANUFACTURERS SPECIFY CALSTRIP QUALITY STRIP STEELS

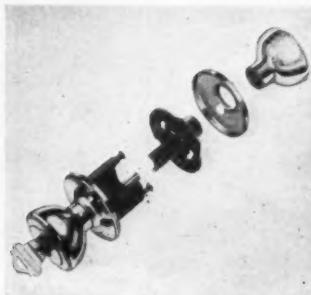
Typical specification: $.0375^{\circ} \pm .0005^{\circ}$ x $6\frac{1}{2}^{\prime\prime}$

The strip steel required for blanked, punched, and formed parts in calculators, adding, and cash machines must be right on gauge with only slight variations permitted. Also, the strip must be within a narrow range of hardness or temper.

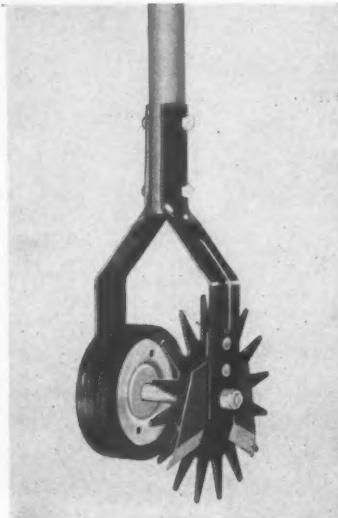
Calstrip's special quality strip assures proper assembly of thousands of moving parts in these machines so that computations can be made quickly and accurately.



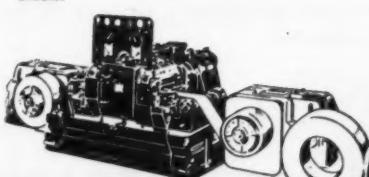
Wheel Chairs must give dependable service. Functional parts such as wheel rims and hubs and brake components are made from dependable Calstrip steels.



Lock Sets are assembled at lower cost and function better when critical parts are made from close tolerance Calstrip steels.



Lawn Edgers are engineered for usability and durability. Manufactured from special purpose Calstrip steels, these product features are guaranteed.



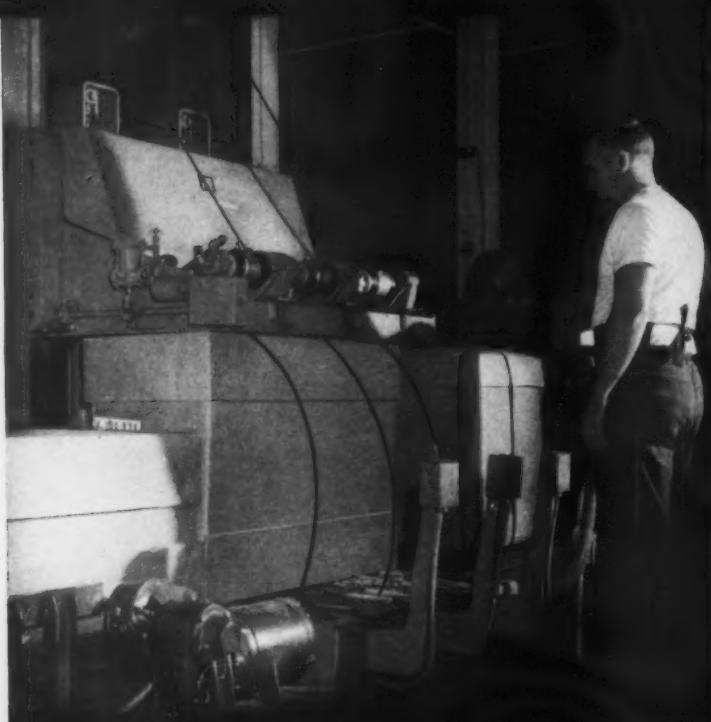
Call or write us today: Low carbon and untempered spring steel strip in coils or cut lengths, with slit or special edges, will be produced for you from a superior quality steel rolled on our Sendzimir mill

Calstrip® STEEL CORPORATION

MILL and OFFICES: 7140 BANDINI BOULEVARD • LOS ANGELES 22, CALIFORNIA

RAYmond 3-1344

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ACME
STEEL

STEEL STRAPPING machine compresses and straps telescope boxes of textiles. (Idea No. S6-6)



ACME
STEEL

STEEL STRAPPING utilizes aluminum ingots for better handling and storage. (Idea No. U6-16)



ACME
STEEL

STEEL STRAPPING cans of chemicals to skids increases handling, storage efficiency. (Idea No. S3-25)

AIM* for product protection

Product protection through Acme Idea packaging can bring you the important benefits of safe, secure packs with increased speed and labor—material economies. Throughout the entire scope of industry Acme Steel Ideas, equipment and materials are protecting and speeding products from production line to final user. You owe it to yourself to learn how.

A product protection wise Acme Idea Man is located near your plant. He is immediately available to discuss your packaging problems and provide you with hundreds of in-use Acme Steel Strapping Ideas for better packaging and shipping. The seven Ideas shown on these pages are included in the Ideas-in-Action Report files your Acme Idea Man will be pleased to show you. Acme Steel has developed many Ideas from experience in all types of industry. Among them are sure to be applications that can be applied to your particular operations with important time and dollar benefits to you.

An Acme Idea Man is ready to offer you Ideas-in-Action, plus his training, experience and steel strapping know-how without cost or obligation in any form.

Your *Acme Idea Man can be contacted at the nearest Acme Steel office. Look under "Steel Strapping" in your classified directory, or send the coupon for full information.

ACME
STEEL

STEEL STRAPPING

Send me — —



ACME
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STEEL STRAPPING skid-loads sheets of paper for safe secure shipping. (Idea No. S3-24)



ACME
STEEL

STEEL STRAPPING machine bundles boxes of kitchen utensils for easier handling. (Idea No. S2-14)



ACME
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STEEL STRAPPING utilizes corrugated boxes for efficient mechanized truck loading. (Idea No. S3-20)



ACME
STEEL

STEEL STRAPPING bundles lumber into compact units for fast, easy job-site delivery. (Idea No. U6-12)

IDEA BOOKS

These two information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.



Write today for your choice of the above two Acme Steel Idea Books. Merely indicate the books you want on the coupon at the right and mail. Your request will be filled promptly, with no obligation.

Acme Steel Products Division
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Please send me the new Acme Steel Idea Books I have checked below:

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 Have an Acme Idea Man call.

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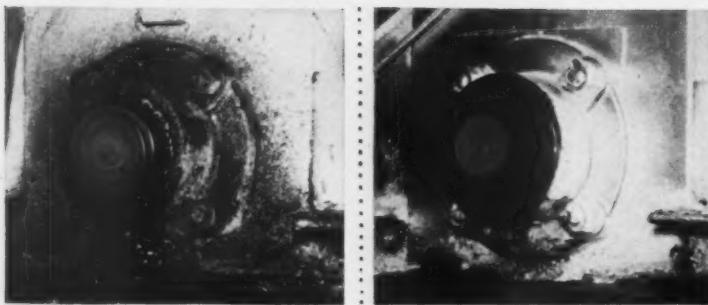
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BEARING REPLACEMENT...

cut 200% WITH

MOLUB-ALLOY.



Unretouched photographs of flange bearings on heat treat ovens.
Using ordinary lubricant Using MOLUB-ALLOY

"Now we lube once a week
instead of once a day"

says Roy Fishburn,
Chief Maintenance Engineer,
R. H. Osbrink Mfg. Company



Overheated bearings required replacement every two months at the Los Angeles plant of this Nationally recognized precision castings company.

**Outstanding results
with MOLUB-ALLOY**

Bearings previously replaced *every two months* are now replaced *once a year*, on regular maintenance schedule. On the recommendation of the chief maintenance engineer the MOLUB-ALLOY program has been adopted throughout the plant with the result that down time has been slashed, parts replacement cut to a minimum and lube cycles extended from once a day to once a week!

For all-type gears, bearings, sliding surfaces

MOLUB-ALLOY self-lubricat-

ing solids improve the bearing surface area through plating, reduce friction and wear and greatly extend the service life of vital parts and applied lubricants. A MOLUB-ALLOY program means reduced inventory by as much as 75% and is available in all types and weights of oils and greases.

**DISTRIBUTION FROM
COAST TO COAST**

Write today for literature and name of local distributor to Dept. 37G, Imperial Oil and Grease Co., Inc., 6505 Wilshire Boulevard, Los Angeles 48, Calif.

National acceptance through unmatched experience. Imitations may prove costly experiments.

REDUCE MAINTENANCE COSTS

with a

MOLUB-ALLOY

Program of Metallic Lubrication

IMPERIAL OIL and GREASE CO., INC.

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LETTERS

... continued
from page 14

positive. If both become positive or negative, they repel each other and the scale comes off.

For some reason this occurs sometimes and the gadgeteers have taken advantage of this phenomenon and claim their device does the trick. They themselves do not know any better.

They sell on testimonial letters and a 90-day money back guarantee. If you keep the gadget longer than 90 days, it's just too bad. We know of a number of instances where, after the gadget proved to be utterly worthless but the buyer had kept it a little longer than 90 days, a refund was refused and all the buyer could do was throw it away. We cut several of them through the middle and found them to be just as full of scale and corrosion as the pipe to which they were connected.

It is literally true that "if the gadget will do anything to the water, so will an ordinary cast iron fitting." The fly in the ointment is that sometimes it works and sometimes it doesn't. In all cases we have encountered, scale begins to deposit again in a comparatively short time.

PAUL G. MUELLER
Southern California Engineering
Co., El Segundo, Calif.

**Bring back that
bound volume, you!**

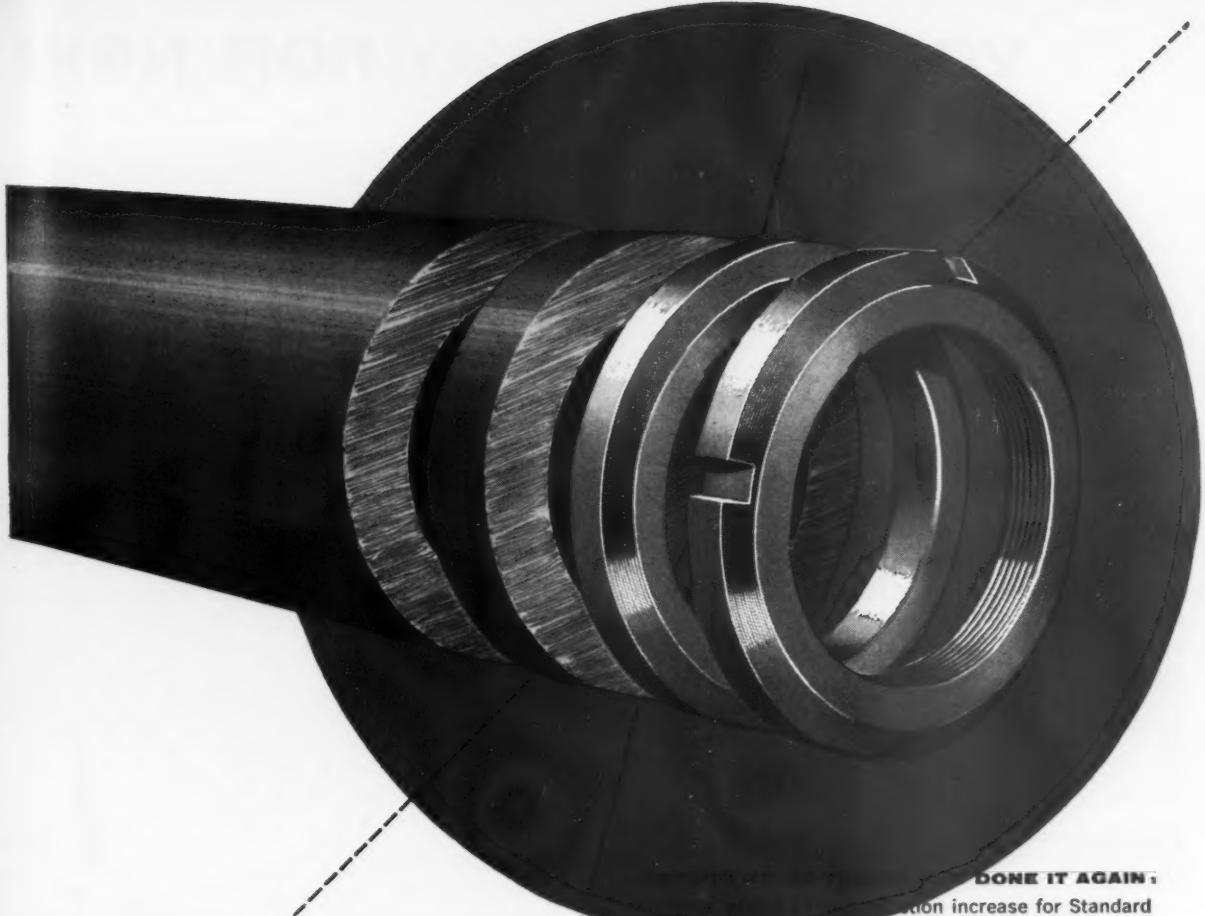
EDITOR—At the present time I am preparing a master's thesis on applications of the learning curve and have read three very excellent articles of a series on the subject in the September, October, and December 1952 issues of **WESTERN INDUSTRY**. The articles were written by Glen E. Ghormley.

I have searched extensively for the back issues here in Los Angeles in order to have personal copies for my file, and have been unsuccessful. As a matter of fact, someone liked the issues so well that the entire bound volume of **WESTERN INDUSTRY** for 1952 has been taken from the University of Southern California library.

JACK M. KIRKLAND

**PUT YOUR OPINION
IN PRINT**

... in **Western Industry's** "Letters" column. Address your comments to Editor, **Western Industry**, 609 Mission St., San Francisco 5, Calif.



24% production increase at Standard's locknut and lockwasher line after switching to OSTUCO NP-60 tubing

OSTUCO
SHELBY, OHIO

OSTUCO TUBING

SEAMLESS AND ELECTRIC RESISTANCE
WELDED STEEL TUBING—Fabricating and Forging

DONE IT AGAIN!

... 24% production increase for Standard Locknut and Washer, Inc., Indianapolis, Indiana. Tubing experts from OSTUCO recently recommended a switch to NP-60 Tubing specially processed for machineability for Standard's locknut and lockwasher line used in ball and roller bearing applications.

Standard components find their way into electric motors, machine tools, automotive, aircraft, farm and construction equipment. Other companies, with equally diverse applications, report similar success with NP-60.

If you are machining bearings, washers, collars, or any circular part, you'll do well to check into the merits of OSTUCO's new NP-60 seamless steel tubing.

GET NP-60 WITH "SINGLE-SOURCE SERVICE."

New NP-60 seamless tubing comes to you with OSTUCO'S unique "Single-Source Service"—experience and facilities for design and development, production and delivery all under one roof. Get together with a tubing expert for preliminary planning on NP-60's possibilities in your product. Contact your nearest sales office or write direct to the factory.

OHIO SEAMLESS TUBE DIVISION of Copperweld Steel Company • SHELBY, OHIO

Birthplace of the Seamless Steel Tube Industry in America

SALES OFFICES: BIRMINGHAM • CHARLOTTE • CHICAGO (Oak Park)
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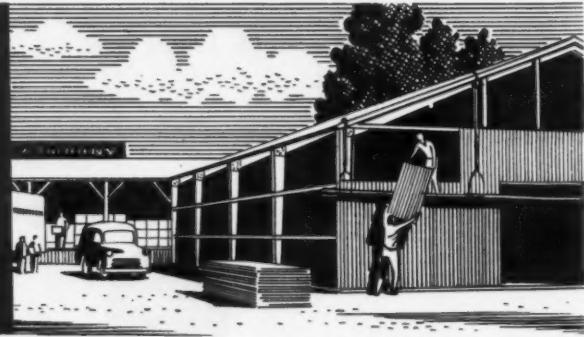
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YOUR BEST BUY FOR NEW



Adapt attractively at low-cost

With a basic Soulé building unit, your contractor can use wood, glass, stucco or brick to achieve distinctive architectural exterior and interior styling at half the custom cost!



Erection by factory crews

Our own crews erect your building. You are assured a permanent, tight, fire-safe building manufactured, erected, backed by Soulé — the West's largest manufacturer of steel buildings!

OR EXPANDED PLANTS

let Soulé "estimate"
on your building needs!



Low initial cost. Standardized design, mass-production of parts and erection in days rather than months, give you a new Soulé Building 40% under the costs of conventional construction.

Immediate availability. Parts are stocked ready for immediate shipment to your site. Within days after our own erection crews arrive, you're using your new Soulé Building.

Clear-span interiors. There are no interior support columns to waste space. You can use every inch of floor space wall-to-wall and stack all the way up to the building ridge.

Easy to expand. All-bolted Soulé Buildings add length, width or wings quickly and economically. Existing sheets are removed from side or end to be expanded; new frames are erected, and building sheeted. That's all!

Sizes to fit any need—New stronger deep corrugated

galvanized sheets—Practically no maintenance—

Call or write for complete details and cost estimate!

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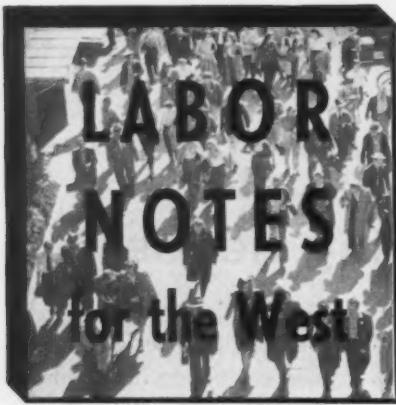
San Diego 1975 Fifth Avenue, BELmont 2-1071 • Portland 2630 N.W. St. Helens Road, CApitol 3-5154

Seattle 4100 West Marginal Way, HOlly 3600 • Spokane East 41 Gray Avenue, RIVERSIDE 7-8063

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4117

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YOU'RE "ASKING FOR IT" IF YOU LEAVE SELECTION OF FOREMEN OR SUPERVISORS TO CHANCE OR OPPORTUNITY! That's the conclusion of a General Electric Co. expert (J. M. Bertotti, Manager, Personnel Practices), speaking the other day at a conference of the California Personnel Management Association in Berkeley.

There are five basic pitfalls common to the techniques used by companies, says Bertotti. Like to see if your plant is among them? Here they are . . . so see if the shoe fits:

1. Technical proficiency of supervisory candidates is usually stressed to the detriment of leadership qualities and the ability to get along with people. A common practice, but a disastrous one in many cases, is to promote the best worker to a supervisory position.

2. Seniority has been unduly emphasized, thus eliminating many candidates with higher supervisory potential who had but short terms of service.

3. A full and adequate consideration of all important factors in making the selection is lacking, since there is no reservoir of potential candidates from which to choose, nor is sufficient time allowed to make an intelligent choice.

4. Organizational lines are seldom crossed, since many have the erroneous opinion that a supervisor for a given unit must be selected from the employees of that one unit alone. This automatically narrows the area of competition and often leads to the selection of less capable people.

5. Personal knowledge of candidates is overemphasized. Many strong candidates who are not well known are not given equal consideration with less qualified candidates who are better known. This occurs in most cases owing to a lack of an organized, procedural method of selection.

A successful plan developed by General Electric was described by Bertotti—the "GE Selection Program for Supervisors." The program consists of four basic steps: (1) determine the specifications of the job to be filled; (2) identify all possible candidates; (3) evaluate the candidates; (4) make the selection decision. Bertotti elaborated concerning each of these steps. If you're plagued with problems in selecting foremen and supervisors, it's fortunate for you that you can now obtain a full copy of his discussion—Management Report No. 231, \$1.00 per copy from Research Div., California Personnel Management Assn., 2180 Milvia St., Berkeley 4, Calif.

SKY'S THE LIMIT ON LIBERALIZED SUGGESTION PLAN at Douglas Aircraft Co.—there's no limit to the amount an employee may earn. George Strompli, staff assistant to

the president and suggestion plan coordinator, estimates that \$100,000 will be awarded to employees during 1957 under the new plan.

Amount of the award in each case will be scaled directly to the amount of money the company saves by adopting a suggestion. During the past year, Douglas employees earned a total of \$77,730 in award money for their ideas. There were 10,798 ideas presented to the company, with more than one out of three persons turning in a suggestion collecting an award. Average pay-off per award winner was \$19.06.

\$1,000,000 FOR IN-PLANT TRAINING DURING 1956—that's the startling figure just announced by Convair, Div. of General Dynamics Corp. at San Diego. According to B. F. Coggan, vice president and San Diego manager, total enrollment of employees for the year was 35,449, about 5,000 above the average employment for the year! (Coggan explains that this indicates that many employees took more than one course.)

More than 50 instructors are working full time on in-plant training at Convair, says H. W. Rubottom, chief of training, and an additional 100 qualified teachers can be called upon as needed. About 31,000 of the enrollees last year studied technical, production and administration subjects, including introductory training for new employees.

Here's how the Convair program is set up. Most of the in-plant training is conducted through classes held during the first and second shifts. Other sessions are held in such institutions as the Aircraft Technical Institute at San Diego Junior College, University of California Extension Division, San Diego State College, California Western University, the new University of San Diego, and Palomar Junior College. Classes also are held for aircraft workers at San Diego Vocational School and evening adult high schools. Students commute by special bus between plant and school Monday through Friday for many of the out-of-plant classes.

Subjects offered cover many fields, including blueprint reading, shop mathematics, electronics, aerodynamics, handling and use of isotopes, industrial management and many others.

NEW PUBLICATIONS TO HELP YOU WITH YOUR LABOR PROBLEMS are the following, with price (if any) and source indicated in each case:

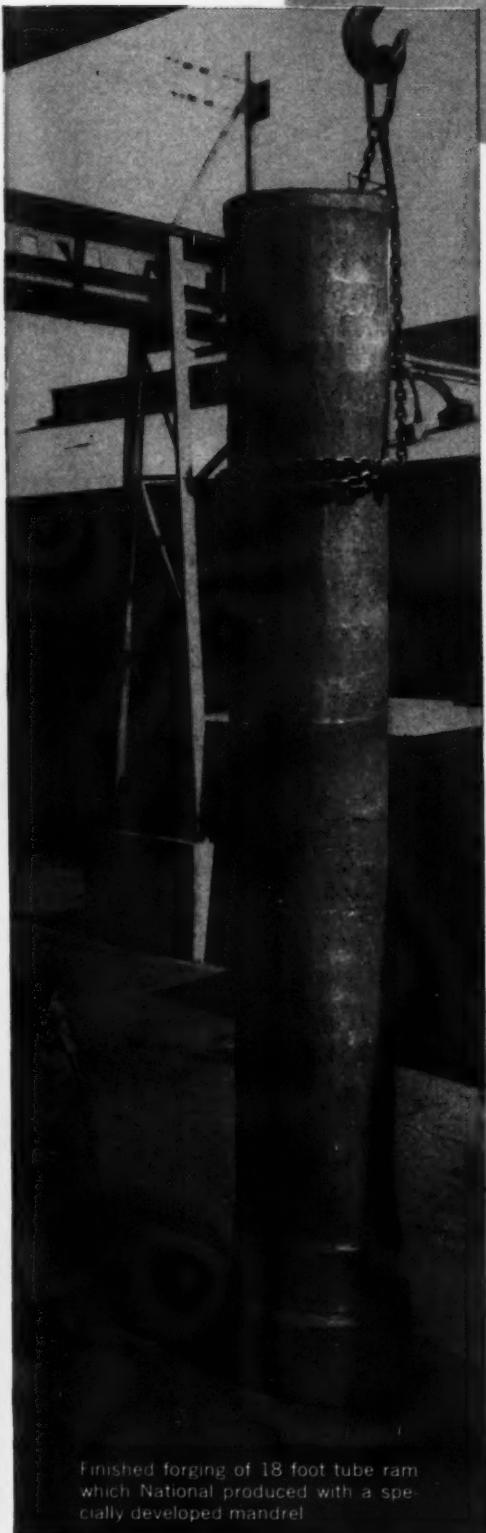
How to Set the Starting Pay of a New Employee is a free fact folder. It briefs information and recommendations in this delicate dilemma faced by personnel directors. The bulletin reviews various phases of the problem, and outlines specific methods to handle salary administration on a fair and equitable basis for both senior employees and new-hires. Ask for your copy from Industrial Psychology, Inc., Box 6157, Tucson 6, Arizona, specifying "Research Release No. 20."

Occupational Wage Survey—San Francisco, Oakland Area reports statistics on wages in both manufacturing and non-manufacturing occupations. Among related wage practices covered are shift differential provisions, minimum entrance rates for women office workers, scheduled weekly hours, paid holidays, paid vacations, and health insurance and pension plans. It's called "BLS Bulletin 1202-8," available for 25c from: U. S. Dept. of Labor, Bureau of Labor Statistics, 630 Sansome St., Room 802, San Francisco 11, Calif.

18 foot mandrel forging

produced by

NATIONAL SUPPLY



Finished forging of 18 foot tube ram which National produced with a specially developed mandrel

Big jobs are everyday occurrences at National's Torrance, California plant. An example is this huge 18 ft., 26,700 lb. tube ram forged for a hydraulic scrap baling press. Specifications called for 33" OD for 14", reduced to 28½" OD for 197" and a 16¼" ID. Because of this unusual size, National developed a specially forged mandrel, tailor-made for this particular forging operation.

Like the customer for the tube ram, you may have an unusual steel processing problem. If so, bring it to National. Our complete facilities, engineering skill and experienced operating personnel assure over-all quality control and efficient, economical handling of your product. For more information about National's complete variety of services, call or write the address below—or plan to visit the plant soon.



National's large hydraulic press facilities enable easy, efficient handling of big forging jobs like this tube ram



THE
NATIONAL SUPPLY
COMPANY

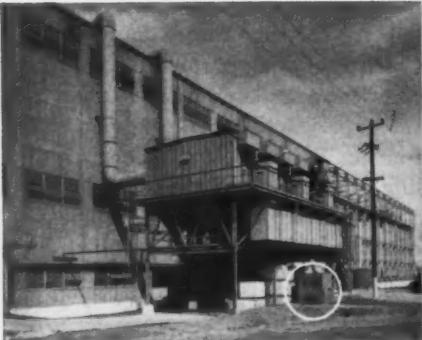
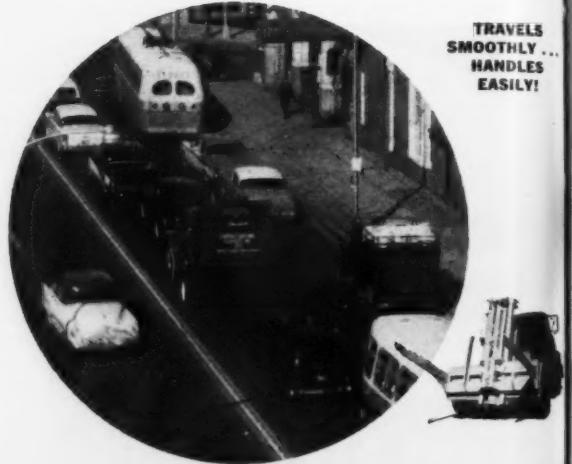
INDUSTRIAL PRODUCTS DIVISION

Torrance, California • Los Angeles Area

National Pressed Steel Forgings • Billets and Large Bars • Steel Castings and Special Machinery
Melting • Forging • Casting • Machining • Heat Treating • Assembling • Welding • Testing

... for more details, circle No. 18 on Reader Service Postcard

Here's Another New Development from Dempster Brothers to cut
Now Automatic Pick-Up of Dempster-Dumpster



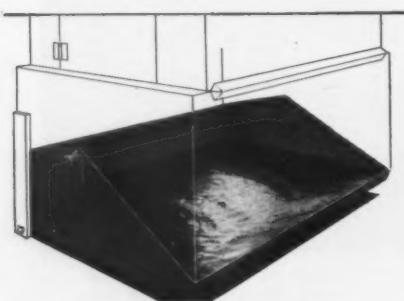
Here's a container adapted for collecting dust from two 75-ton furnaces.



Containers can be served inside buildings.



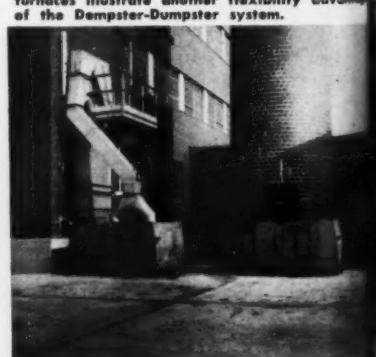
Dempster-Dumpster handles extremely heavy materials like this Fullers Earth.



Sump Bottom Containers are available. This leak-proof feature is desirable wherever moist, liquid and wet refuse is a problem.



Tilt Type Containers for handling liquid and solid materials are available.



Adaptation like this one for handling cinders from furnaces illustrate another flexibility advantage of the Dempster-Dumpster system.

THE
DEMPSTER
DUMPSTER[®]
 SYSTEM

DEMPSTER BROTHERS
 577 N. Knox, Knoxville 17, Tennessee

Materials Handling Cost in Manufacturing Plants - - -

Containers—Driver Never Leaves the Cab!

McWHIRTER MATERIAL HANDLING CO., Atlanta, Says:

DUMPS FAST
AND
THOROUGH!

"Our new Dempster-Dumpster GRD 304-F-2 speeds up collection of materials in Dempster-Dumpster Detachable Containers. The automatic pick-up feature of the GRD 304-F-2 makes for faster, easier, simpler handling of containers."

This new Dempster-Dumpster enables containers to be picked-up, hauled, dumped and returned to location without driver leaving cab. All this, plus shorter turning and maneuvering area requirements, and plus high dumping—a versatile range of dumping heights up to 11 feet. This new Dempster-Dumpster and the Dempster-Dumpster System offer many advantages for speeding-up handling of bulk material loads in big Dempster-Dumpster Detachable Containers that are worth consideration in your plant now! Write us today for complete literature. Or, if your operation would require greater payload handling capacities, ask us about our Dempster-Dumpster built to handle payloads up to and over 36,000 lbs., plus detachable containers up to 21 cu. yds. in size. Manufactured by Dempster Brothers, Inc.



And services Skip Type Containers having required base.



Acid materials like these stripped battery cases are just a sample of the type of wastes handled.



Many Standard and Special Tank Type Containers for handling liquids, chemicals, oils, etc., are available.

Big 15-yard Universal Containers are available. Note the area of the top opening. Standing in the container you would see the view as camera pictures it at right below. "Like trying to fill a bottomless pit," report many happy users.



successfully exploring new ideas to reduce your materials handling costs with the

DEMPSTER-DUMPSTER SYSTEM

Clip and mail this coupon for FREE LITERATURE!

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

Please send me folder on the new Dempster-Dumpster GRD 304-F-2 and the Dempster-Dumpster System.



... for more details, circle No. 19 on Reader Service Postcard

27

Staley solves waste disposal problem with an Allis-Chalmers tractor shovel



Cuts the trench. The first step in Staley's landfill system is to cut a trench. Their Allis-Chalmers HD-11G, with 111 net engine hp and a large-capacity hydraulic system, easily handles tough excavating. It is also mobile enough to carry excavated material to conveniently located stockpiles.

Spreads and compacts refuse. A truck dumps refuse at the head of the trench. The HD-11G then pushes or carries refuse with the bucket and spreads it in the ditch. Utilizing its 32,000 lb of weight, the crawler tractor compacts the material to a small fraction of its original volume.



Seals it in forever. At the end of each day, the tractor shovel takes dirt from stockpiles— $2\frac{1}{4}$ cu yd at a pass—and spreads it over compacted refuse, leaving smooth, clean, level land. In many cases, useless lowlands have been reclaimed by the landfill system and later put to valuable use as playgrounds or building sites.

ALLIS-CHALMERS 

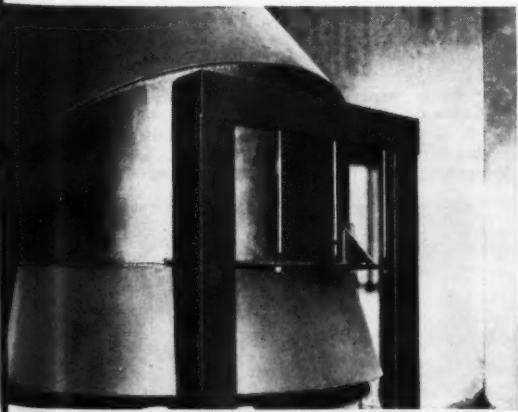


... for more details, circle No. 20 on Reader Service Postcard
WESTERN INDUSTRY — July 1957



Welder applies the finishing touch to a section of corrosion resistant wrought iron duct slated for shipment to the Orlando Utilities Commission's municipal power plant.

Wrought Iron provides rugged opposition to corrosion in Orlando, Florida's municipal power plant



This wrought iron surge well outlet presents a formidable defense against corrosion and fatigue stresses at the Orlando powerhouse.

Three hundred sixty tons of durable wrought iron help minimize the threat of corrosion at the Orlando Utilities Commission's municipal power plant.

Here, ducts, tanks, pipe and stack installations of wrought iron are successfully withstanding corrosion. Result is low-cost corrosion control . . . virtually no maintenance or repairs. This material actually pays for itself in years of service rendered.

Reasons why wrought iron brings such permanence to plant facilities appear in our booklet, *The ABC's of Wrought Iron*. Write for your copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

Available in Canada and throughout the world

Architects and Engineers: Robert & Co., Associates, Atlanta, Georgia
Fabricators: Brock & Blevins & Co., Inc., Rossville, Georgia
J. J. Finnigan Co., Inc., Atlanta, Georgia
Snyder Tank Co., Birmingham, Alabama

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

... for more details, circle No. 21 on Reader Service Postcard

WESTERN MEETING REPORTS

DOES ELECTRONICS MEAN ANYTHING TO YOU? It should—as a plant or industrial engineer, plant manager or supervisor . . . and anyone else concerned with the efficient operation of an industrial plant.

Because, electronics can be used in your plant to save you time and money. Automation that will enable your factories to practically run themselves, and instruments that will control, protect and process your product, were spawned by electronics. Yes, electronics can give birth to many time and labor saving devices in your plant.

See for yourself, The WESCON (Western Electronic Show and Convention) scheduled for August 20-23 will feature over 200 papers and 700 exhibits—some of which will help you.

Here are some of the sessions in which you'll be interested. On Tuesday, August 20, from 2 to 4:30 p.m., there will be a session on "Engineering Management." Among talks at this session will be "Your Self Development into Supervision and Management," by H. M. O'Bryan of Sylvania Electric Products; "The Transition from Engineer to Supervisor," Herbert M. Elliott of RCA; "Systems Engineering," Isaac L. Auerbach of Burroughs Corp.

"Automatic Instrumentation" will be discussed from 9:30 a.m. to noon on Thursday, Aug. 22. A feature of this panel will be a talk on "Automatic Test Systems for Production," by Herbert S. Dordick of RCA.

A session on "Production Techniques" will take place from 2 to 4:30 p.m. on the same day. H. P. Mansberg of Allen B. Du Mont Laboratories will discuss "Applications of Flying Spot Scanning Techniques to Automatic Inspection"; "Capacitors for Automation" will be viewed by G. P. Smith of Corning Glass Works; and "Use of Ceramic-Metal Seals" will be subject of a talk by James L. Hall of Thermo Materials, Inc.

Then there are the exhibits—over 700 of them! We'll bet that you can pick up a lot of good ideas by watching the demonstrations and talking with exhibitors.

No sir, it won't hurt to go WESCON from August 20 to 23 at the Cow Palace. Better mark it on your calendar right now. It'll cost you only \$1 to register . . . and you might pick up \$1,000,000 worth of ideas!

YOU CAN BRUSH UP ON—OR LEARN ABOUT—statistical methods in industry by enrolling in a two-week course (August 5-16) offered on the Los Angeles campus of the University of California.

Lecture and laboratory instruction is offered in a "Basic Course in Quality Control by Statistical Methods" and an "Advanced Course in Industrial Statistical Methods."

The statistical methods in industry course is designed

to be of interest to all individuals concerned with quality control, inspection, and reliability problems in research, design, development, and production. Participants in the basic course should have preparation equivalent to at least high school mathematics. The advanced course assumes a background preparation equivalent to a basic course in statistics or quality control.

AID TO ENGINEERING STUDIES is being fostered by the Santa Ana Valley chapter of the American Society of Tool Engineers which—at a recent meeting—instigated three \$100 scholarships—one to each of the junior colleges in the area.

The money is to be used to assist second-year students in going on to college and studying engineering. An unusual feature of the scholarships is that they are worth \$100 only when signed by the registrar of the school at which the student is enrolled. This is to assure that the money is to be spent to further the student's education.

NEW OFFICERS HAVE BEEN ELECTED FOR PROFESSIONAL SOCIETIES throughout the West. Pictures of some of the new presidents and other officers are included in this issue of *Western Industry* . . . and others will be included in later issues. Watch for expanded association and society news in future issues of *Western Industry*.



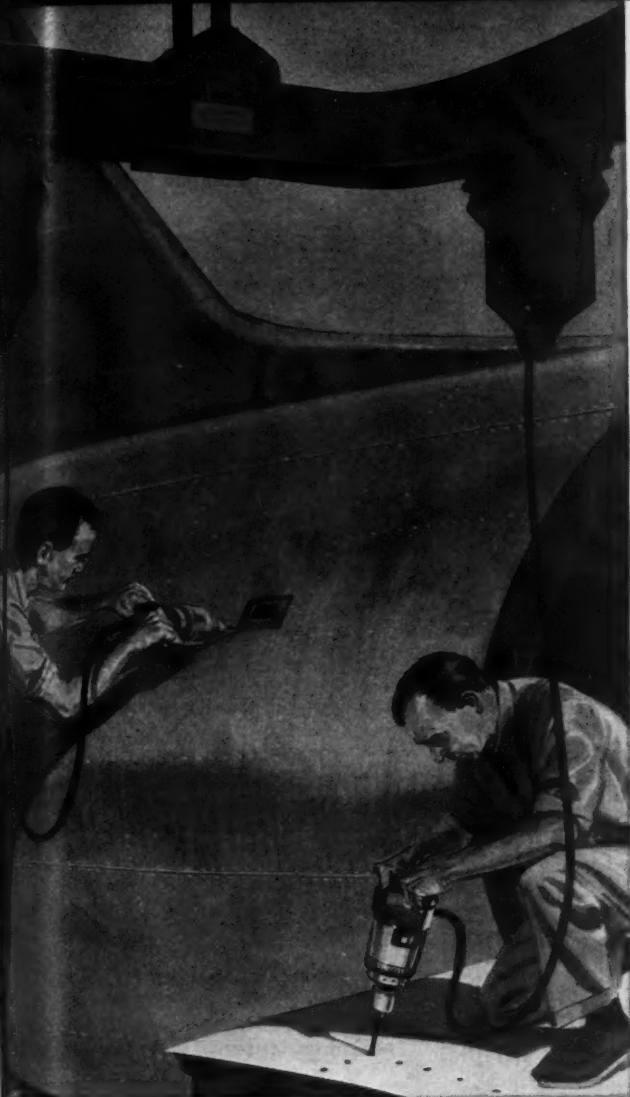
H. F. DOWNIE, assistant works industrial engineer, Columbia-Geneva division (Pittsburg), U. S. Steel Corp., has been elected president of the San Francisco-Oakland chapter of the American Institute of Industrial Engineers. Other officers elected recently include: vice president **Norman Grabstein**, Kaiser Aluminum & Chemical Corp.; secretary **Bob Hodson**, Montgomery Ward & Co.; treasurer **W. W. Weisenfeld**, Coast Manufacturing & Supply Co.; and directors **Frank Taylor**, Oliver Tire & Rubber Co.; **N. E. Karvelis**, and **R. L. Knighton**, both of Columbia-Geneva division of U. S. Steel Corp.



H. D. SMITH, assistant general manager, Matson Terminals, Inc., has been elected president of the Northern California chapter of the American Material Handling Society. Other officers include: vice president **Larry Megargee**, W. P. Fuller & Co.; corresponding secretary **Larry F. Tennent**, Pacific Pallet Co.; recording secretary **Ellis H. Woolley**, U. S. Naval Supply Center; treasurer **Roy C. Brown**, Elder & Co.; program chairman **Leslie Herman**, Safeway Stores; membership chairman **Raymond J. Perin**, Ira G. Perin Co.; education chairman **Robert O. Swendsen**, EBMUD; publicity, **Walter C. Brunberg**, Western Pacific.



EXECUTIVE BOARD MEETING—DENVER CHAPTER, AMERICAN MATERIAL HANDLING SOCIETY. Left to right: **John Fox**, new treasurer; **Harry Newmann**, new president; **Dana Malchow**, past president—current publicity chairman; **Lew Rees**, program chairman for past year; **Jack Patten**, treasurer for past year; **Garrett Renzelman**, past national director. Other officers for the new year include: vice president **Carl R. Nelson**; secretary **Shelton Streeter**; national director **Vern Bybee**.



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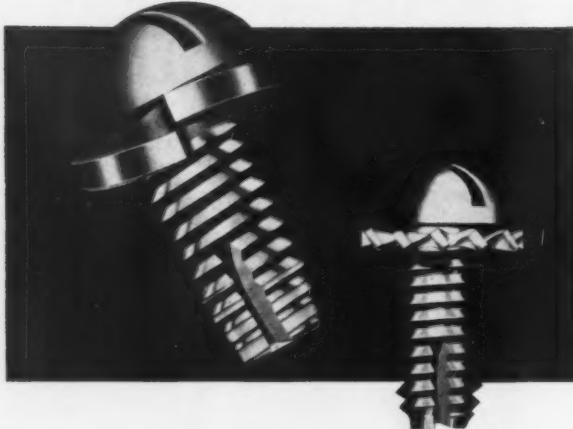
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WESTERN MEETINGS

...continued from page 30



"WHEN GOOD FELLOWS GET TOGETHER" . . . at the luncheon sponsored by the San Francisco chapter of the American Institute of Plant Engineers during the Western Plant Maintenance and Engineering Conference. Left to right: Tom H. Hardgrove, Western regional vice president, AIPE; Jim Weeks, national delegate from the Los Angeles chapter; John A. Panella, past president, San Francisco chapter; John A. Waligora, president, American Institute of Plant Engineers; C. A. Gallaher, president, Los Angeles chapter; Keith Leonard, newly-elected president, San Francisco chapter. Other newly-elected officers of the S. F. chapter include: vice president K. W. Buckley; secretary R. L. Pleski; treasurer R. H. Morey; and member-at-large R. R. Scholar.

WESTERN
MEETINGS
YOU
SHOULD
PLAN
TO ATTEND

Aug. 20-23—WESTERN ELECTRONIC SHOW & CONVENTION, sponsored by San Francisco and Los Angeles Sections representing the 7th Region Institute of Radio Engineers and the West Coast Electronic Manufacturers Association, Cow Palace, San Francisco. Contact Don Larson, WESCON, 342 N. La Brea Ave., Los Angeles 36.

Aug. 28-30—AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, Pacific general meeting, Yakima, Wash.

Sept. 10-12—AMERICAN MINING CONGRESS, metal mining and industrial minerals convention, Hotels Utah and Newhouse, Salt Lake City, Utah.

Sept. 17-18—RETMA SYMPOSIUM ON NUMERICAL CONTROL SYSTEMS FOR MACHINE TOOLS (Electronic Control & Data Processing), Ambassador Hotel, Los Angeles. Further information from the sponsoring group: Engineering Dept., Radio-Electronics-Television Manufacturers Assn., Rm. 650, 11 West 42nd St., New York 36, N. Y.

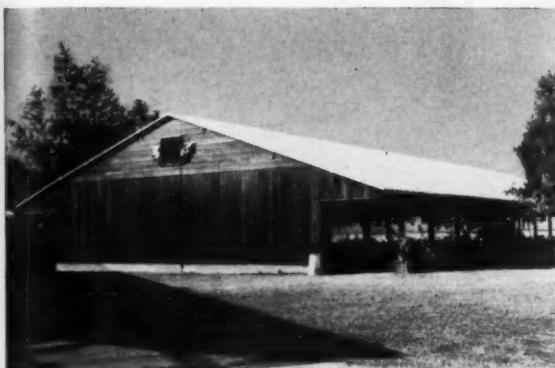
Oct. 14-18—INTERNATIONAL INDUSTRIAL DEVELOPMENT CONFERENCE, San Francisco. Sponsored by Time-Life International and Stanford Research Institute. Further information may be obtained from conference secretary, Edward S. Prentice, at Stanford Research Institute, Menlo Park, Calif.

Oct. 15-17—38TH PACIFIC COAST MANAGEMENT CONFERENCE, regional conference, Claremont Hotel, Berkeley, Calif. Contact Everett Van Every, secretary-manager, Western Management Assoc., 2180 Milvia St., Berkeley, Calif.

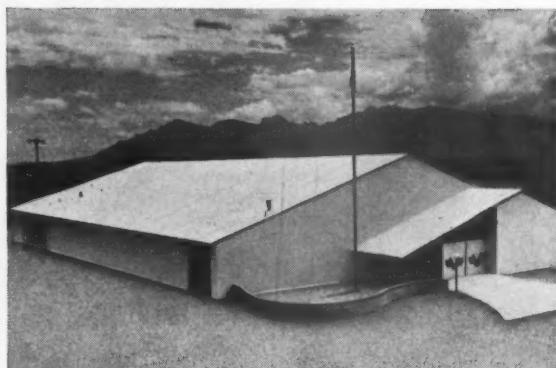
Oct. 24-25—AIRCRAFT ELECTRICAL SOCIETY, 14th annual display of aviation electrical equipment, Pan Pacific Auditorium, Los Angeles.

Nov. 13-15—EIGHTH NATIONAL CONFERENCE ON STANDARDS. First meeting on West Coast. St. Francis Hotel, San Francisco. For further information write to H. Thomas Hallowell, Jr., Standard Pressed Steel Co., Jenkinsburg, Pa.

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ECONOMY—Real dollar savings are possible when you build with steel. Rigid frame construction with post-free interiors, gives you almost 100% use of the enclosed area. Speed of construction puts the building to use faster . . . and there's no costly maintenance problem with steel. That's why the District Fair Committee, at Turlock, California, specified steel for the functional, economical fair building shown above.



VERSATILITY—The building above is an example of the flexibility of use possible with steel structures. This is a combination gymnasium, auditorium and classroom in Tucson, Arizona. Steel buildings are being constructed for every purpose in all kinds of businesses, industries and institutions. And remember, the use of steel construction allows for the easiest and most economical expansion of your building when needed.



STABILITY—The strength and rigidity of steel makes it the ideal material to use in the construction of industrial plants, warehouses and shipping sheds. It combines structural strength with freedom of layout and movement in your building. Rigid frame construction provides a stable structure which withstands battering winds, weather and accidental knocks. That's why steel was selected for the loading depot, above, under lease by Pacific Motor Trucking Company in Fresno.



BEAUTY—The attractive looking office building above, located in Bakersfield, is just one example of the many smart architectural designs possible with steel. NOTE: The architect-designed buildings shown on this page were constructed from Butler Manufacturing Co. pre-engineered structural systems using United States Steel Roofing, Siding, Plates and Sheets. When you build, specify the one material that gives you all the important building advantages...steel...United States Steel.

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WESTERN INDUSTRY — July 1957

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When Colt engineers made their first survey for the *Cannon Electric Company of Los Angeles*, they discovered that while the outside shade temperature was 67° F., the temperature at head level of the furnace operators was a torrid 105° F. with just one furnace in operation. Colt recommended the installation of eight Colt Clear Opening Ventilators (shown here) plus one Colt Wall Inflow Unit. Another survey, conducted several months after installation, revealed this startling change: with an outside shade temperature of 66° F., temperature at head level of the furnace operators was 76° F. **WITH TWO FURNACES IN OPERATION!**

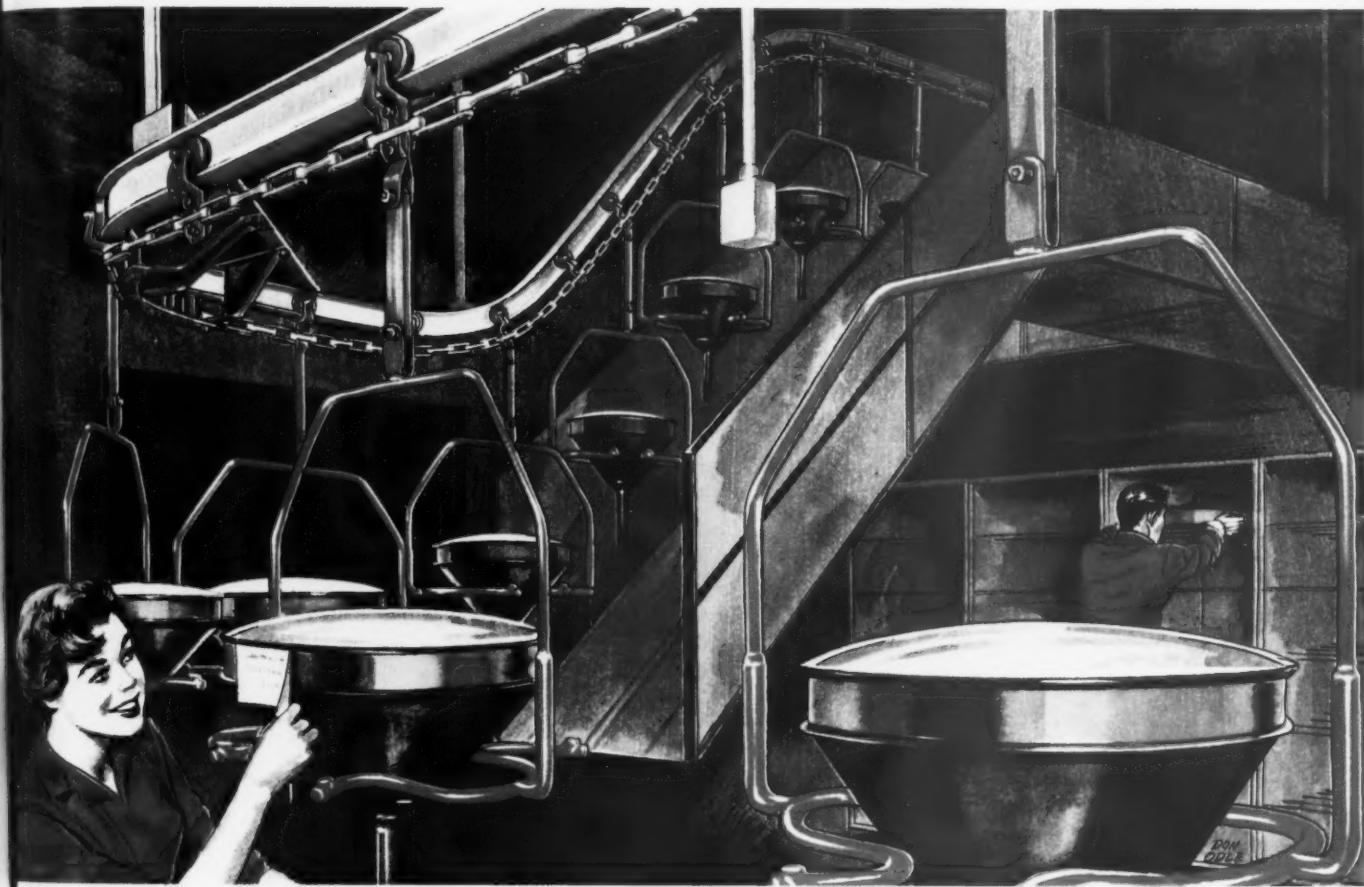
If you have an unusual ventilation problem in your plant call Colt today. A survey of your premises is free and without obligation!

Ventilators shown here are just one of the wide variety of types manufactured by Colt . . . each a quality item, yet priced competitively.

Write for Free Technical Manual giving full details of the Colt System and equipment used.



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This Webb conveyor installation, processing RCA Colorama TV picture tubes, is a perfect example of what can be accomplished with modern conveying techniques. In addition to the obvious economies realized with mechanized materials movement, these five conveyors, totaling 2385 feet, have provided RCA with four important benefits:

1. **Save Production Time** . . . conveyors dip down at every work station to an efficient work level, bringing the material to the worker . . . minimizing manual handling.
2. **Paced Production Flow** . . . conveyors carry materials to each operation at a predetermined rate, aiding in control of production rate.
3. **Overhead Live Storage** . . . stock-piling on floors eliminated, providing greater productive area and increasing production potential of the plant.
4. **Greater Employee Safety** . . . cleaner, uncluttered work areas because materials travel and are stored overhead.

Your plant can realize these same benefits, and others as well, with modern conveyorization techniques. For more information, or for engineering service, write or call Webb today.



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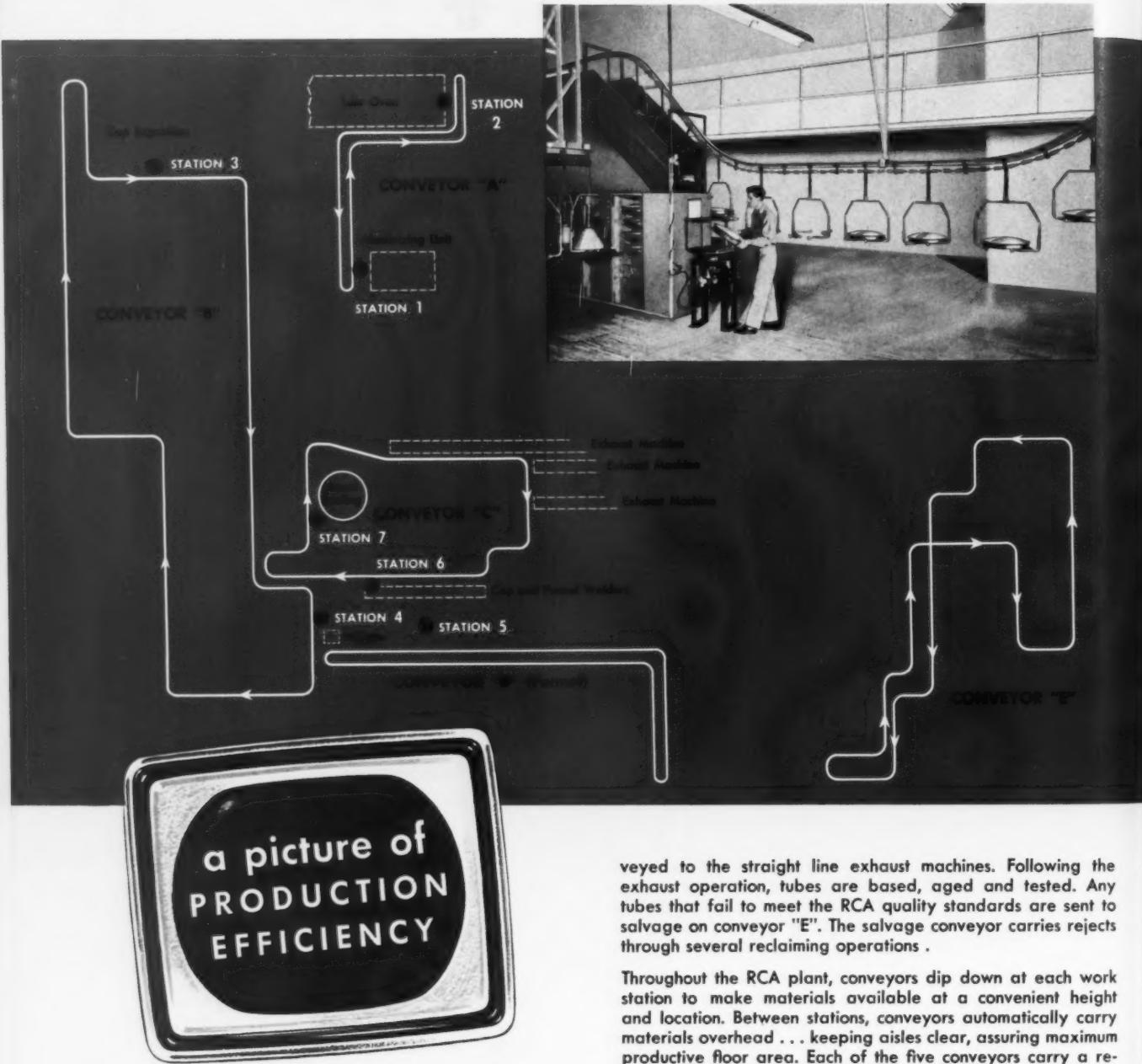
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Webb Conveyors at RCA . . .



At the start of the RCA Colorama TV picture tube processing and assembly operations, the cap assemblies are taken from the aluminizing unit and placed on Webb trolley conveyor "A" at station 1. This conveyor transports the caps automatically to station 2 where they are removed and placed in a Lehr bake-out oven. After traveling through the oven, caps are inspected and placed on conveyor "B" at station 3.

The caps are then automatically carried overhead to station 4 where they are placed on a vibrator (see photo above) before being welded to funnel assemblies at station 5. Funnel assemblies are processed along the route of conveyor "D". After welding, the assemblies are placed on conveyor "C" at station 6 and carried to the mount sealing machine at station 7. This machine automatically seals the electron gun in the bulb. Several assemblies at one time rotate merry-go-round fashion in the sealing machine fixture.

Tube assemblies are again placed on conveyor "C" and con-

veyed to the straight line exhaust machines. Following the exhaust operation, tubes are based, aged and tested. Any tubes that fail to meet the RCA quality standards are sent to salvage on conveyor "E". The salvage conveyor carries rejects through several reclaiming operations.

Throughout the RCA plant, conveyors dip down at each work station to make materials available at a convenient height and location. Between stations, conveyors automatically carry materials overhead . . . keeping aisles clear, assuring maximum productive floor area. Each of the five conveyors carry a recirculating inventory of parts, thus keeping parts storage overhead.

The Jervis B. Webb Company manufactures all types of conveyors . . . from simple straight line units to complex systems. Webb conveyors can be designed to carry all types of materials . . . from toothpicks to logs, from raw metal to 40,000 lb. tractors. Whatever your materials, a Webb conveyor can convey them . . . at lower production cost, with greater production efficiency and with more effective production control.

If your problem is modernizing production flow . . . call a Webb Engineer

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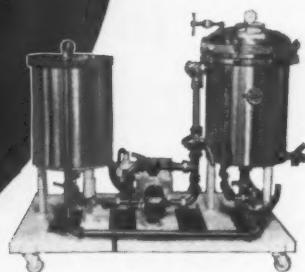
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Food products	Electro plating

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West Coast Branch, Sparkler Manufacturing Co., 8479 State Street, South Gate, California. Phone: 7-0557

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What's the lowest cost way to produce steel parts like these?

You may be paying considerably more than you need to for parts like these if you aren't taking advantage of Ryerson flame-cutting service.

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flame-cut parts. The blank for a 6" disc is 49% heavier than the disc itself. Storage and handling expenses are reduced, too.

4. **Less time in process**—You can often convert finished products into cash more quickly because parts can be produced faster by flame cutting.
5. **No loss on spoilage or rejects**—They're our problem—not yours.
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"It's inevitable: engineers will be the top managers in industry tomorrow..."



... and that's why the horizons are limitless for young engineers with solid backgrounds in management fundamentals!"

Q. Mr. Bell, have you noted a significant trend toward the use of engineers in top management?

A. Yes, this seems to be one of the newest trends in industry.

Q. Do you favor the trend?

A. I think it's a good thing, insofar as the engineer in question is fully trained for management. Not all of them are, you know.

Q. Do engineers possess certain qualities that make them desirable for management?

A. Personally, I have always thought that the engineer basically has a better background for management than lawyers or financial men, who have held many of the key management jobs in past years.

Q. Why is this?

A. Well, for one thing an engineer can understand manufacturing techniques. This is perhaps the most important element of industrial management.

Q. How about the other elements of management?

A. Of course, the manufacturing techniques are only

one facet of the problem. But what I'm saying is this—all other things being equal, the average engineer knows manufacturing better than the accountant or salesman. Otherwise he wouldn't be an engineer. He can learn sales techniques, he can call on financial advisors, he can use outside business consultants. But nobody can help him in manufacturing. This he must know, and know well.

Q. Manufacturing is most important?

A. Whether it is or isn't, it's the hardest element of management to learn. The engineer has already learned it, so he's that much ahead of the others.

Q. Is there anything else in engineering training that equips a man for management?

A. In the first place, engineers are trained to think analytically. You'd be surprised how many excellent men never learn to think in this way. But it's part of engineering training—an engineer must learn to think analytically or he'll never be an engineer.

Q. Why is analytical thinking important?

A. Because it enables the engineer-manager to separate the relevant from the irrelevant; to see the problem in its

* O. M. BELL, as you will discover in following the text of this interview, has some provocative opinions on the subject of engineers in management. Because he is one of the West's youngest (39) engineer-presidents (heading up Tapered Air Products Corp., Los Angeles), he has good reason to believe that he understands the formula that the young engineer should follow closely if he is to attain management stature. His company is a large fabricator of milled structural components, including integrally-stiffened wing skins, and was a major subcontractor on the B-58 project.



"Managers must be able to seek and recognize the truth. Engineering training helps . . . engineers are usually taught to analyze each problem and idea in its own light."

Q. How about negative factors in engineering training?

A. Well, we've already mentioned the tendency to think of people as oscilloscopes or semiconductors. There's also this factor . . . engineers as a general rule have little knowledge of finance. And in this day and age of government controls, taxation structures, renegotiations, and other financial red tape, this lack of knowledge can prove fatal. I would like to say, however, that if the engineer has genuine management ambitions, that's half the battle.

Q. What's the best way to overcome this lack of knowledge?

A. It's really easy to overcome it, if the engineer will apply himself to a little post-graduate education. Extensive studying and reading, some business school courses, evening division study on the college level. Even a good mail order correspondence course.

Q. Why is it that so few engineers ever accumulate any knowledge of finance?

A. I think it's traceable in large part to a void in engineering education. After all, there's a lot of technical learning that must be assimilated in a college engineering education, and most engineering students have a very limited opportunity to take courses in non-engineering skills like accounting or business law. Then, the graduate engineer has to study to keep up with new developments, and naturally decides that the financial end of the business will have to take care of itself.

Q. In general, then, you're saying that the highly-trained engineer isn't necessarily a potential manager.

A. What I'm trying to say is this: the highly-trained technician will always be just that, a highly trained technician and probably a very happy one. But he'll never qualify for management unless he branches out, expands his horizons. Remember, too, many engineers have no management ambitions.

Q. You mentioned before that management ambitions are half the battle.

A. That's right.

Q. How do you mean that?

A. Well, the engineer can learn about everything necessary for management if he wants to. If he has managerial ambitions, he'll have the inner drive to learn, to expand his knowledge, to develop his managerial potential.

Q. What are opportunities for engineers in management?

A. I think they're excellent, and getting better. Here are some statistics to support my claim that top management jobs are open to engineers more than at any time in the history of American industry. For example, a recent study of 900 top industrial executives showed that 45% had a major educational background in science or engineering. It was estimated in the same report that 60% of today's

real perspective. Too often the real problem doesn't appear without analysis—without a lot of real digging. Managers must be able to seek the truth and recognize the truth. Engineering training helps him do this.

Q. Isn't there a danger in over-analytical thinking?

A. A danger? Well, of course there's a danger in overdoing anything. There is this danger, however. A manager with engineering training must always keep in mind that while science is inherently objective, scientists are not always objective. People are people, not machines. The engineer-manager might be prone to think of people as he would think of an oscilloscope.

Q. What do you mean by that? The engineering manager might not be able to understand people?

A. I think this is a danger. A misapplied physical law can be easily noted and adjusted. Not so with a mishandled human being. But this is not a weakness to be applied to engineers alone, and the engineer who keeps his human relations in perspective will never have this difficulty. And the engineer has many more plus factors in his favor.

Q. What are some of these plus factors in addition to analytical thinking?

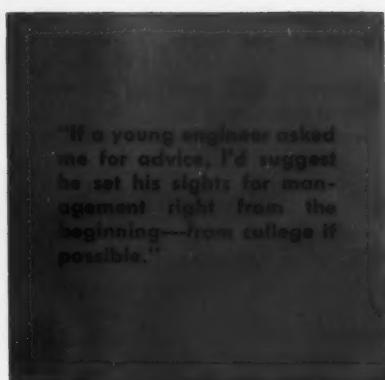
A. Two of the greatest causes of managerial failure are prejudice and inflexibility. By prejudice, I mean the man who will say to his associates, "Go ahead and develop something else if you want to, but this is the way it must be." You know this man, I'm sure. But the well-equipped engineer is objective in his thinking, and he is always open to new suggestions if they are scientifically sound.

Q. What is meant by inflexibility?

A. It's similar to prejudice. It's an inability to adapt to a changing situation, an insistence to use the same approach to everything. Engineers and scientists are usually taught to be flexible in their approach to new ideas—to analyze each idea and problem in its own light.



You'd be surprised at how many excellent men never seem to think analytically. That's what puts engineers ahead of the others."



"If a young engineer asked me for advice, I'd suggest he set his sights for management right from the beginning—from college if possible."



"Unfortunately, most engineering students have a very limited opportunity to take courses in non-engineering skills. That's why to qualify for management they must branch out and expand their knowledge of finance and sales, for example."

engineers will have administrative duties in the next 20 years.

Q. How does this compare with, say, ten years ago?

A. In a 1950 survey, engineers held 32% of the top management jobs in the country's largest corporations—those with more than \$75,000,000 in assets. Incidentally, lawyers held 19% of the top jobs, so you can see that the trend toward engineering management was asserting itself even seven years ago. It is my guess that the percentage of engineers in top management today is much higher, and will continue to climb.

Q. Why?

A. The nature of industry today makes this trend inevitable.

Q. You mean the continuing stress on technology?

A. Yes. World War II actually provided the impetus for most of our recent technological developments, which have had a significant impact on industry. You've noted, of course, that the trend is all in the direction of modern technology, and this is forcing top management to turn to men with the engineering backgrounds, providing they're equipped with other managerial skills too.

Q. You don't think, then, that the trend started before World War II?

A. Not much before that, anyway. Let's look at our industrial structure of 20 or 30 years ago. Mass production techniques were perfected, and men like Chrysler and Knudsen come to mind—men from the shop. Before that the great corporations were coming into being, and you think automatically of men like Judge Gary of U. S. Steel as typifying top management. But today, and in the post-war era, men like Charlie Wilson—both the G.M. and G.E. Charlie Wilsons—men with at least some engineering

background. I'm convinced the trend is toward the engineer—the fully-equipped engineer.

Q. All right, we've determined that engineers have management potential, have great managerial opportunities. Now, how would you counsel the young engineer with management ambitions?

A. I wouldn't want to appear presumptuous by giving some unsolicited advice, but if a young engineer asked me for some, I'd start off by suggesting that he set his sights for management right from the beginning—from college, if possible.

Q. How can he best plan a management career?

A. First, I think he must look into himself and see if he really wants a management position. I recently read in one of the magazines about a young engineer who quit his job in a huff when a project he had been working on was canceled. When told that it would be economically impractical to produce the product in question, he said that he was going to look for a job where he would have a chance to do some pure engineering without worrying about commercial problems.

Q. I suppose we should admire him for his engineering integrity, anyway.

A. Yes, I imagine so. Obviously this is a man who belongs in the pure research field. But not under the wildest stretch of the imagination is he qualified for a top management job. I would say first, then, that our young engineer examine his soul to see if he really wants to be a manager.

Q. If he does?

A. Then he must set out to develop some basic knowledge of promotion, costs, potential markets, things of that nature. I would suggest that he put in a year or so in a financial house, bank, investment security firm, or some similar company. Let's remember that a manager must learn how to handle other people's money.

Q. Would a job like that give the potential manager the necessary financial background you mentioned earlier?

A. Not all of the background, but certainly he'd gain needed experience and knowledge. For one thing, he'd be exposed to finance, perhaps for the first time in his life on a large scale.

Q. What should he do next?

A. Probably next should come a production or design engineering job. Production preferably, so he can learn production control and other problems.

Q. Why is production so important?

A. When our engineer becomes a manager, he'll be constantly wrestling with production problems. Production is the foundation of almost every industry, and he'd better understand its ramifications thoroughly.

Q. What next?

A. A lot of valuable experience can be gained through work with a government agency, such as Wright Field or the AEC. You'd be surprised how much difference there is between working for a non-profit organization and one where there is a profit to be made. There is much opportunity in the non-profit agency to grow and develop, to learn things you've always wanted to learn. And after this experience, I would advise a sales job for our young engineer.

Q. Why sales?

A. You've probably heard the saying, "anybody can make it, but not everybody can sell it." Good salesmen are always sought after, and a top salesman can have an outstanding year or two and move right into sales management. Sales is possibly the surest route to management. So with all this experience, plus a good grounding in accounting, finance, business law, and understanding of human relations, our engineer is ready to make a good manager.

Q. Now that our engineer has the ambition to be a manager, and the qualifications, must he also possess any basic managerial drives?

A. If you mean are there certain drives that make up the management-potential, I think the answer is yes. The potential manager must be born with certain qualities—curiosity, perseverance—and I'm not sure that a man can learn to accept responsibility or make responsible decisions that might affect the lives of many people. I think he must be born with these qualities.

Q. Then managers are born, not made?

A. Oh, no, not that at all. There are many management qualities that can be acquired as well, among them the ability to think analytically, to attack problems with a large degree of intensity and tenacity. I'd say that managers are neither born nor made, but are probably the result of both.

Q. What drives a man to become a manager? Is it a yearning for power, wealth, fame?

A. I suppose it depends mostly on the man. All of us like power, I think, even if we won't admit it. Mostly though, I think it's an overriding desire for achievement. There's something stimulating about building an organization.

In so many instances, a large organization depends on top management almost solely—on the chief executive—for leadership. The forthright hand, so to speak. The financial rewards are really secondary, I believe, to this knowledge that an organization is thriving, that people are making good livings, largely through your own efforts.

Q. Where are the opportunities for management, in the large or small firms?

A. This must be determined mostly by the man himself. There are advantages and disadvantages in both. Some people just can't work with a small firm—maybe they prefer the security of the larger organization, where individual problems and responsibilities are minimized.

Q. What are some of the problems of working for a small firm?

A. In a small company, you're always on the firing line. You're wearing many hats. One day you have an inspection problem, tomorrow it's tooling, next week it's production. In large firms, these problems would fall into different departments. Then there's the profit angle, too.

Q. How does the profit angle enter into this?

A. Well, it stands to reason that the small organization must make more immediate profit than the large one. Working capital, for example, is tighter and outside costs must be more quickly replaced.

Q. Personalities often enter into this, too, don't they?

A. Yes, most of the time. The small company is dominated by personalities. Everybody knows the boss, and is dominated by the boss' personality. Human relations are very important here.

Q. Is it true that a man can develop more quickly in a small organization?

A. He will, provided he can get along with the management. In the small firm, if the ownership likes a man they train him for top spots. Actually, though, in the small company there are only a few really good management jobs, five or six tops. Because of the heavier burden of paperwork in the big company, there are more top jobs there, but of course they're harder to obtain. So I guess it's up to the individual to make the choice.

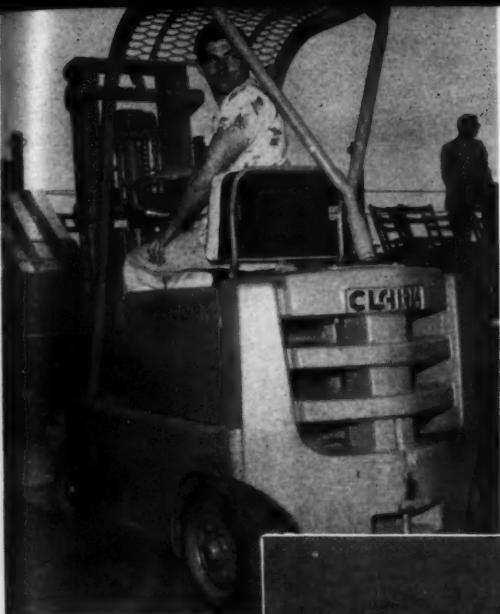
Q. Generally speaking, then, do you believe that the engineer has a good opportunity in management?

A. Again, it's up to the engineer. He can almost write his own ticket, if he is fully qualified. I think it would be wrong, though, for us to push engineers into management, with the hope that they will turn out all right. This way we would be losing a good engineer, gaining a poor manager.

Management requires planned action, and similarly engineering requires a plan to achieve a proper solution. Engineers and managers have this in common—the need for systematic and imaginative assaults on important problems. For the engineer who can take a positive view, who is not afraid of new ways and new ideas, who has a solid background in management fundamentals, the horizons are limitless.

Thank you very much, Mr. Bell . . .

WHAT SUBJECT DO YOU WANT COVERED BY A WESTERN INDUSTRY SPECIAL INTERVIEW ARTICLE?
Let us know in a note to The Editor, Western Industry, 609 Mission St., San Francisco 5, Calif.



IN ACTION during the final run-off, Clark Enoch (representing Robert Gair Div. of Continental Can Co.) gets set to maneuver his steed through a tight spot in the maze of obstacles. We know he made it, because . . .



HERE HE IS THE WINNER, holding his championship trophy and a championship plaque awarded to his company, presented to him by the smiling gent at the right—Bill Go-ninan, Los Angeles AMHS chapter 1956-1957 president.



HERE'S THE MAN who set up the first Fork-Truck Rodeo in 1956 and almost single-handedly staged the 1957 event—Homer Poston, Chief Stores Officer, Long Beach Naval Shipyard.

Western Fork-Truck Rodeo will go "national" in '58!

. . . based on success of the event pioneered in 1956 by the Los Angeles Chapter of the American Material Handling Society, and the boost it has given to safety.

MAY 18 WAS "FORK-TRUCK DAY" in the West. Morning of that day, at Cheli Air Force Depot in Southern California, 89 of the West's best fork truck drivers from Western manufacturing plants and Armed Forces Bases were on hand . . . for the Second Annual Western Championship Fork-Truck Rodeo, sponsored by the Los Angeles Chapter of the American Material Handling Society.

Throughout the day, starters' guns sent entrants off two at a time through identical courses, pair following pair. Each competitor was graded in half a dozen categories (including elapsed time for the course, precision in maneuvering fork truck through a maze of obstacles, positioning of loads under various conditions, equipment checkout, and a written examination.) Only drivers with six-month accident free records were eligible to compete.

At day's end, a new Western champ walked off with a handsome permanent trophy for himself and a plaque for his company (see pictures above).

The day was a successful one—not only for the new champ and the winners of separate heats (who also received trophies), but also in emphasizing and teaching safety at the operator's level. In its short two-year life, the event has gained the strong backing of safety engineers in Western plants and casualty insurance organizations.

So successful have the two Western "Rodeos" been that the National Chapter of the American Material Handling Society has decided to make the 1958 Rodeo national in scope, with regional champions from all over the nation joining in the finals.

It's "hats off" to the Los Angeles AMHS for the idea that started it all.



THE ADVICE THEY WILL GIVE IS FREE, as two members of the Society for Advancement of Management at Portland discuss scientific management approaches with James Tobin (center), president of Beaver Heat Treating Co., Portland. Behind this conference is the unique story of how Portland S.A.M. pioneered and proved out a plan under which . . .

CRIES of "help" from small industries in the Portland area are answered promptly, efficiently and without charge by a Small Business Counseling Service.

The industries have received aid frequently supplied by industrial engineering consultants. This includes managerial decisions, cost analyses, pricing, time studies, plant layout, machine operation, methods improvement, product design, accounting procedures, statistical quality control, advertising, sales planning and design of forms.

Counseling is given free of charge by experts during their spare time.

The Counseling Service was pioneered by the Portland Chapter of the Society for Advancement of Management in 1952. Since that time, a wide variety of industries—service industries, metal fabricators, and plastics manufacturers—have received help.

Experimental and cautious at the start

The idea started when a local businessman called the Chamber of Commerce in search of help on management problems. The story soon got around to S.A.M., and a group of members decided to volunteer their services to small firms which normally would not hire management consultants.

At first the counseling was experimental and cautious. As the group gained experience and the need for their service was proved, the program was improved and expanded. Experts outside S.A.M. were called in when necessary. Students in neighboring universities were allowed to participate to gain practical experience in industry.

After five years' experience, S.A.M. is more than ever convinced of small business' need for help in scientific management techniques. Managers are often faced with close decisions which might have an enormous effect on the future of their business. They often feel that a lack of facts and modern techniques makes a dart game out of decision-making.

Small firms fear the unfamiliar

Small businessmen may have heard of some industrial engineering techniques for judging the economics of a company, gathering facts for vital records, and setting up an effective operation, but they are hesitant to try them for a number of reasons. Many distrust new methods or in any

Spare-time experts cure small plant management and production headaches

case do not have the time to try them. Others are afraid they don't have the ability to master the modern techniques; those that are bold enough are discouraged by dry complex presentation in many text books.

These men are usually from the practical school and are well aware that one can sometimes get into a lot of trouble if he tries a new unfamiliar idea. The president of a small company may not be willing to try professional consultants. He might feel that they are not interested in the small fee he can afford, or that they will give him only a bit of theory for his hard-earned dollars. So sometimes without even a person he can trust and use as a sounding board, Mr. Small Business faces his decisions alone.

Encouragement toward scientific methods

Counseling by S.A.M. has helped managers many ways. Besides solving a few of their immediate problems, it gives them experience and trust in modern scientific methods. Each one will have a better idea of how to use industrial engineering consultants to improve his business.

It introduces him to many sources of technical help such as sales and service organizations, government agencies, technical literature, etc. And finally, it encourages him to take an analytical viewpoint of his operation, and to spend more time in planning.

The company counseled is not the only one that reaps benefits. The engineers, office managers, business administrators, production managers, and salesmen who participate in the counseling groups learn a great deal themselves. They usually become familiar with a new industry, broaden the understanding of their field, and pick up some new ideas.

First project was the proving ground

Many participants learn about other new fields from the other experts in the counseling group. The group also gets a rare opportunity to have intimate contact with top management's point of view. All this experience adds up to a training program which helps the participants to do their regular jobs better and prepares them for advancement in their own company.

The first major counseling project which S.A.M. undertook was to advise a small plastics firm on financial management and productivity. A group of five engineers and

business administrators from S.A.M. met with the owners of the business to talk over the problems and gather the necessary facts. After the initial meeting, the group met two or three times by themselves and twice with the owners to report their recommendations. Some time later a follow-up meeting was arranged.

The counseling group encouraged the owners to continue and expand the cost accounting system they had just begun. A cost accounting procedure was outlined which described the methods for collecting labor costs, material cost inventory figures, and overhead charges. Five forms were designed to use with the recommended system for collecting and summarizing these costs and applying them to each job done.

Wide range of problems covered

Several other problems were studied and solutions recommended. The plastics company was advised to divide its manufacturing charges into three categories: (1) initial charges such as die costs; (2) order charges such as setup; (3) and fixed item costs which would be the average cost of labor, material, and overhead per item.

This policy would allow a satisfactory profit for small jobs and would encourage larger orders. Advertising was surveyed and several changes were recommended, such as using a trademark, etc. Auxiliary equipment for an injection press was designed to provide safer, faster operation and lower power consumption.

This company at the time had just moved into a new building and was considering going into a new type of manufacturing. The group concurred with the owners' decision to enter this new field. In addition a revised plant layout was recommended to improve flow of materials, and allow for future expansion.

All in all, the counseling staff appreciated the opportunity to broaden its knowledge and experience, and was very gratified by the complete cooperation which the owners gave.

Last year a small battery manufacturer was counseled

BUSY COORDINATOR
of Portland S.A.M.'s
small business coun-
seling service is
James C. Anderson,
industrial engineer for
Western Pine Associa-
tion, Portland.



by S.A.M. The methods and results are typical of recent projects. The study was composed of an office manager, a business administrator, and an industrial engineer. Each spent from 10 to 20 evening hours on the project over a period of two months. Eight or nine hours were spent with the owner; the rest of the time was used for group or individual work.

When the project was complete, a verbal report of recommendations was made. This was followed by a complete written report. In this case as in most, the owner acted upon most of the suggestions. The group was especially pleased to learn that shortly afterward the company used an industrial engineering consultant for the first time.

The main problem for management was establishing a profitable selling price for the batteries. Up to this time prices had been set primarily on the best guess of competitors' selling price without knowing the amount of profit

or loss. The group worked out simple ways of accurately figuring material costs, labor costs, fixed and variable overhead, excise tax, etc.

It also recommended that special work be separated from work on the regular line of batteries. The company proceeded to revise its pricing schedules according to the proposed system. Naturally competitive pressure might force a special price offer, but even in this case management would now know how close it was paring the profit margin.

A variety of other problems was briefly studied. A system for payment of salesmen was presented. Break-even curves were drawn up showing the change in costs and profits which would occur as sales volume increased or decreased. An appraisal of present pricing, best profit areas, and best selling batteries was made.

In addition to its own work, the group found that the "Small Business Aids" issued by the U. S. Department of Commerce gave valuable aid on some of the owner's problems, and passed on to him a number of pamphlets which it thought would be most helpful. The problem of a delivery chute on the pasting machine which was constantly jamming, requiring the attention of an extra man, was solved by increasing the slope of the chute.

Higher sales and profits in all cases

In following up on these counseling projects by visiting the companies a year or so after the counseling, S.A.M. has found that—without exception—the firms have benefited far beyond the few suggestions that were given during the study. Their managements are spending more time in planning. Consultants are being called in when needed. Record keeping has improved. And best of all, *sales and profits have increased to an unexpected level in all cases*.

Out of the experience gained on a large number of projects S.A.M. has developed a standard procedure for counseling. All counseling is done under the guidance of a coordinator appointed by the president of S.A.M. Before a project is begun, the coordinator and the small business owner discuss the problem to be studied so that there will be a mutual understanding.

The project chairman and a qualified staff are then selected and briefed on the problems to be studied. The group then arranges to meet the owners at a convenient time and proceeds with the study. Before the final report is presented to the company, it is reviewed for approval by the S.A.M. Executive Board. Verbal and written reports are then given to the owners and the project is finished. After a suitable lapse of time the project chairman makes a follow-up visit to the company to evaluate the success of the project.

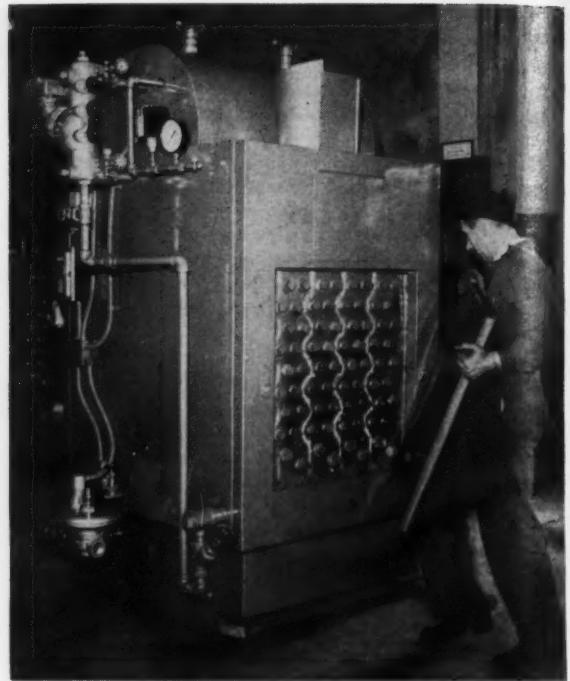
Ethics observed, confidences kept

S.A.M. has taken great pains to maintain the highest level of professional ethics at all times. The owner is always asked to specify which information should be strictly confidential and which can be used for educational purposes. The small business coordinator frankly states the scope and expected results of a project before it begins. When the owner desires it, the members of the group are happy to work with an employee to solve his problems.

The business owners have been open-minded toward industrial engineering techniques. They are capable and energetic men, but, as they start new businesses or expand old ones, problems arise with which they have no experience. S.A.M. and its small business counseling groups have been proud to help introduce them to industrial engineering and the unlimited benefits of scientific management.



COMPACT SIMPLICITY of design is evident in this view of boiler before housing is added. In addition to reducing required space, the design is a boon to . . .



EASE OF MAINTENANCE, with head screws for all boiler tubes immediately accessible when a single cover plate is removed. The job of cleaning tubes is simple.

Steam (with a new look) is here to stay

Behind its "come-back" you'll find new-type, high efficiency, precision controlled boilers like those now produced by a Los Angeles firm.

MANY INDUSTRIAL DEVELOPMENTS occur without fanfare. Generally these are in conjunction with the older processes or techniques where nothing "new" actually occurs, but where the development is technically more important than many "new" developments which receive wide public notice.

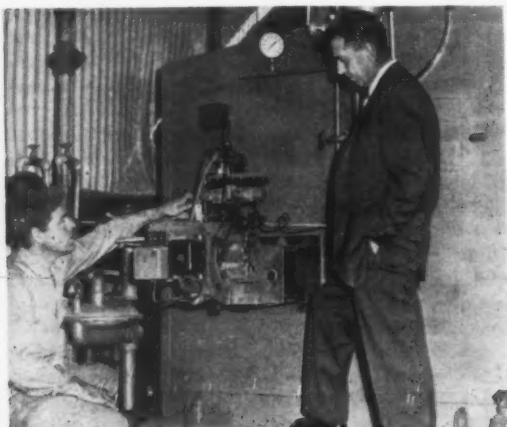
The recent trend toward the use of the new-type, high efficiency, precision controlled steam boilers or generators in many types of industry falls in this category. Many people (including quite a few industrial engineers) regard steam heat and steam power as belonging to a past era. Mere mention of it conjures mental images of messy

boiler rooms vomiting waves of heat every time the door is opened, of hissing valves and dripping steam pipes. This is like comparing the Chinese skyrocket of a thousand years ago to a rocket-propelled intercontinental guided missile.

The new type, high efficiency boilers are a far cry from their hissing old ancestors. They can be installed any place in the plant on a minimum of floor space. They require no isolation or separate rooms. Heat losses are so low that the exterior becomes only pleasantly warm to the touch.

Gas-fired and equipped with automatic controls, they will become a silent and unobtrusive partner in any production operation where heat or power is required, turning "on" and "off" at pre-set intervals, furnishing heat in a measured amount, or power at specific pressure. They will operate for months at a time with no more attention than that provided an electric thermostat or relay.

One of the latest designs of these



"FIRING" THE BOILER is done by a simple flick of the switch. Mechanic does it here as Paul Butler of M & A Steel Sales and Service, La Puente, Calif., looks on.

new, high efficiency boiler is being produced by a Western manufacturer—Pastushin Industries Inc., of Los Angeles. This is a particularly compact design, requiring a minimum of floor space. Different models are available for portable or permanent installation. It can be used indoors or outdoors, and requires no isolation. Accessibility for maintenance is a feature of these boilers.

When equipped with the proper controls, it becomes fully automatic in operation, turning "on" and "off" at desired times or intervals, and furnishing heat in specific amounts or steam at any desired pressure (up to maximum). The "high efficiency" factor on this boiler is denoted by its guaranteed 80% thermal efficiency—a figure thought impossible but a few years ago.

A good look dispels doubts

To dispel our own doubts concerning the "trend back toward steam," we accompanied a Pastushin Industries design engineer on a tour of local boiler installations. All doubts have vanished!

One place visited was a large electroplating job shop—American Electro Plating Company, Los Angeles. John Van Bergen, owner-operator of the establishment, summed it up this way . . . "I used to heat seven solution tanks and a vapor degreaser with electricity at a cost of between \$200 and \$250 a month. Now I heat them with steam at a cost of between \$85 and \$90 a month. The 4000-watt electric tank heaters were replaced by conventional steam baffles, each critically controlled by its own thermostat. Exhaust steam from the tank baffles is used to heat a large hot water rinse tank, thus eliminating all direct heat losses.

"The boiler is automatically controlled. It turns on at 3 a.m., so that the solutions are properly heated to begin the day's work. It turns off automatically at the end of the day. In nearly a year, it has required no attention whatsoever.

"Installing the steam boiler was the best cost-saving investment I have made in ten years!"

The American Electro Plating boiler is installed out-of-the-way in one corner of the shop.

We looked over a similar installation at M & A Steel Sales and Service, Inc., La Puente, Calif. Here, steam from the boiler is used to heat large pickling tanks. The boiler is located in a small lean-to building just outside the operating room, and operates continuously. Temperature in the pickling

tanks is manually controlled by opening a steam valve into the solution when additional heat is required.

Paul Butler, secretary-treasurer of the company, says that the boiler has required no attention whatsoever (maintenance-wise) since its installation in October 1955. A water softener was installed with the boiler to reduce internal scaling. While no comparative cost figures were available, company officials are well satisfied with the operating economy of this solution heating installation.

Critical pressures met

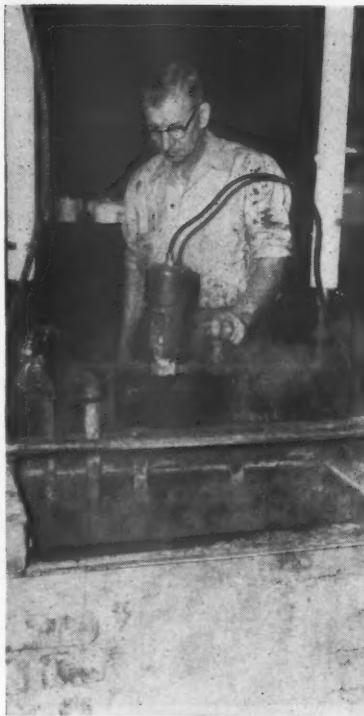
A third company—Precision Plastic Products Co., of Pasadena—uses a Pastushin "Hercules" boiler to generate steam for its record presses. L. H. Mead, president of the company, points out that the pressure supplied for pressing phonograph records is very critical, and that variance of a few pounds in either direction results in inferior record quality. This boiler is equipped with an automatic pressure control to keep pressure within the required limits. In this particular installation, the required pressure happens to be 150% of normal boiler pressure, yet precision operation is not affected.

Geraldine Roehl, shop supervisor, points out that seven record presses are used to produce from 5,000 to 7,000 phonograph records daily. During many months of operation, the boiler has supplied this required steam pressure without attention or more than routine maintenance of any type. Operation of the new, high efficiency boiler has proved extremely economical in view of the precision steam requirements it meets.

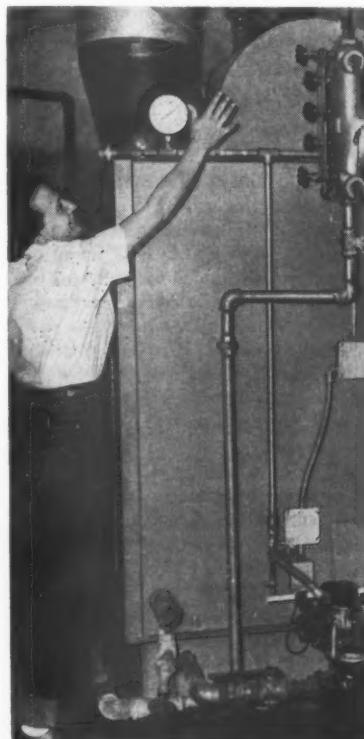
Twice the power, half the space

A final installation visited involved the use of a new, high efficiency boiler in a large Los Angeles laundry. Here a direct comparison with an older, less efficient boiler was available. The new high efficiency installation produces twice as much power in a boiler occupying only half the floor space of the installation formerly used. It operates 12 hours a day, 6 days a week, and in months of use has required no extra attention.

This all leads to a very definite conclusion—steam is here to stay . . . especially in its new "packaged," high efficiency form, where installation involves neither space or location problems, and its use involves no more attention than that required for any other automatic installation.



SIMPLE THERMOSTAT controlling this steam-heated tank's solution temperature is examined by John Van Bergen, owner of American Electro Plating Co.



SHE'S PROVING that heat losses from the boiler at Precision Plastic Products Co., Pasadena, make it only warm to the touch.



This moving job raised the roof

As shown at left, 30-ft. section of roof comes off; 20-ton machinery goes in . . . and production keeps rolling along!

WESTERN "imagineering" teamed with Yankee ingenuity to keep production rolling in a Berkeley, Calif., plant while new machinery was being installed.

How was a new steam hammer put in place at Berkeley Forge & Tool Co.? Well, the problem was solved by Dalzell Rigging Co., which specializes in what it calls Western "imagineering."

Examples: The rigging firm was the first company to lift an entire bridge from its foundation by employing barges and the tide differential . . . and first to lower machinery into a seemingly inaccessible hole by filling it with ice, sliding machinery on top of the ice . . . and letting it "melt" to the bottom.

But the Berkeley Forge problem was different. The "sow" or anvil of the old steam hammer—a solid block of metal weighing some 20 tons—had to be removed as well as the weighty hammer itself, and the even heavier top and bottom of the new steam hammer installed in its place.

The Dalzell firm cased the job and came up with this bit of "imagineering" . . . "We'll lift off a section of the roof, hoist out the old hammer through this gap with one of our big mobile cranes, then ease in the new one without disturbing any other part of the plant. The whole job won't take more than a couple of days and the rest of the plant can keep up full production."

So it was done. A 30-foot section of the roof was lifted off. the old hammer

raised in sections through the hole and the huge new installation completed within the specified time.

And it took precise "imagineering"

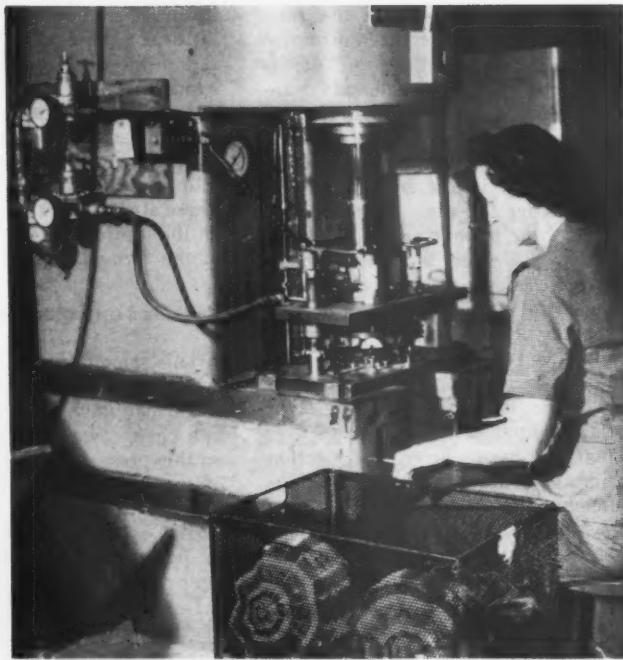
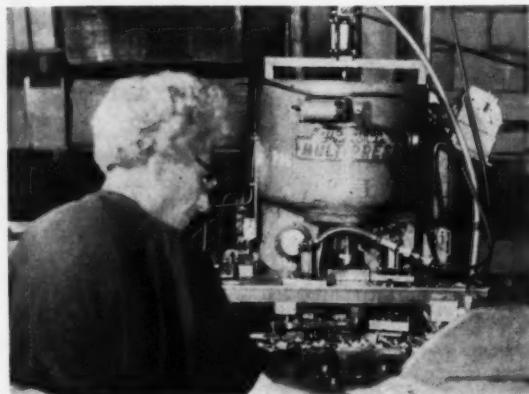
to figure out the exact way to raise and lower these ponderous pieces of machinery without endangering anyone or stalling production.



NEW STEAM HAMMER gets installed under the watchful eyes of plant foreman Michael Pavlovich (nearest to camera) and his assistant . . . with production in the rest of the shop undisturbed.



HERE IS THE END RESULT ...



HERE IS HOW YOU MAKE IT ... The 8-ton press shown above is used for forming the multi-colored carousel top, at a rate of 1,000 parts per hour. At left, 4-ton Multipress with a 20-station index table produces about 2,000 chime bars an hour. It all shows how ...

Versatile presses speed production

Production tools as flexible and fanciful as a child's imagination solve the problem of 15 model changes a year.

HERE is a case where a production tool must be as flexible and fanciful as a child's imagination.

The place: Mattel, Inc., Los Angeles, where more than 15 different toy models each year presents many complex and unique challenges.

The problem: Will production machines be able to be used and reused in spite of model changes? Will the machines hold up through almost constant use?

The solution: Versatility in the use of presses.

Throughout our plant, the presses (Denison hydraulic Multipresses) are used for forming, trimming, broaching, punching, crimping and small assembly jobs. One example of long service is a 4-ton Multipress now in its ninth year of operation.

* This unit, with a 20-station feed of special design, runs 16 hours a day

producing approximately 2,000 chime bars an hour. One operator feeds the zinc castings on to the table. The press performs two jobs; it cuts the high tensile music wire to desired length and also punches two holes in the sides of the chime bar used when the toy is assembled.

Former method used to perform these operations produced 660 parts per hour. Not only has the production rate been tripled on the Multipress, but rejects—formerly causing a 10% loss—have been virtually eliminated.

Fabricating the chime bars ...

The zinc cast chime bars are brought to the Multipress station and placed in a storage bin accessible to the operator. The operator, who sits opposite the press, loads the untrimmed part onto the index table holding fixtures. The action of the index table is automatic, cycling approximately 35 times per minute.

The die fixture, working in conjunction with the ram action of the press, has two stations. At the first station the high tensile music wire is trimmed to proper length. The wire cutting bar is actuated by an air cylin-

AUTHOR OF THIS ARTICLE



Dolfe Lee
Chief Engineer
Mattel, Inc.
Los Angeles, Cal.

der which is cammed off the ram. Each down stroke of the ram moves the cutting bar into position. At the same time the ram actuates air cylinders which cause the two horizontal punches to pierce the zinc casting.

The chime bar moves from the cutting position into a free station directly under the ram. With the next index of the table it moves to station number two, where the two side holes are punched. A mechanical arm located two stations away from the punching action ejects the part into a chute.

For maximum production, another Multipress, tooled the same way, steps up the output of chime bars to over 4,000 an hour. From this station chime bars are conveyed to various assembly lines in the plant where they are incorporated in the musical toys manufactured by Mattel. These include the *Music Box Carousel*, *Musical Animals*, *Jack in the Music Box* and the now very popular *Mousegetar*.

Other uses for the presses

Multipresses are also used in other operations throughout the plant. In manufacturing the carousel, an 8-ton press is used for forming the multi-colored carousel top. A thousand parts an hour are formed on this machine. The lithographed and pierced metal blank is placed on the 8-piece die set; these form blocks are conical in shape mounted on a rear pivot. The upper platten of the die also has 8 conical shaped forming blocks positioned to fill the spaces alternate to those on the bottom set.

As the ram descends, the bottom

formers move down on the end pivot, to form a point toward the center of the metal blank. The top formers, which are spring mounted, form the alternate wave in the completed part. Four air cylinders mounted on the upper platen move the upper die set into position as the ram descends. These air cylinders also exert pressure on the top formers for quick ejection of the formed part.

Unskilled operators can do it

This same press with different dies is used for other forming operations in the manufacturing processes. There is a changeover at least twice a year on this press. Since the press does all of the actual work, no time is lost in operator training. Inexperienced women operators can be used for this job since the dual lever operation of the press prevents careless accidents.

In another part of the plant a 4-ton hydraulic press is used for assembling small musical animals produced by our company. The two parts of the musical animals are delivered to the press station by moving conveyor belts from the assembly line. The bottom part of the animal containing the musical apparatus is set into the holding fixture which is an exact duplicate of the shape of the toy.

The top part of the toy is placed over the bottom section and the press actuated. The press ram holding a die, the exact duplicate of this section of the toy, descends to crimp the $1/8$ inch edge around the entire toy. Here again an unskilled operator performs over 500 completed assemblies an hour.

Golf cart speeds boss in making his appointed rounds



MOBILE BOSS—Jack Buchanan shows off his new "chariot" which transports him to far reaches of the warehouse. No. "hoofers" is he, as he takes it easy in the golf cart.

YOU MIGHT NOT be able to play golf in your warehouse, but you might find a golf cart a handy gadget to have around.

Jack Buchanan, warehouse superintendent at S & W Fine Foods warehouse in San Francisco, has found that a Plamor golf cart is just the thing he needs for making his rounds.

Scooting around 238,000 sq. ft.

As you can see in the photo at left, Jack can easily scoot around the 238,000-sq. ft. building. "No sore feet for me," says Jack. And he can get a lot more work done with the time saved from "hoofing it."

The only change made on the car was adding a welded pipe bumper on front as a safety device.

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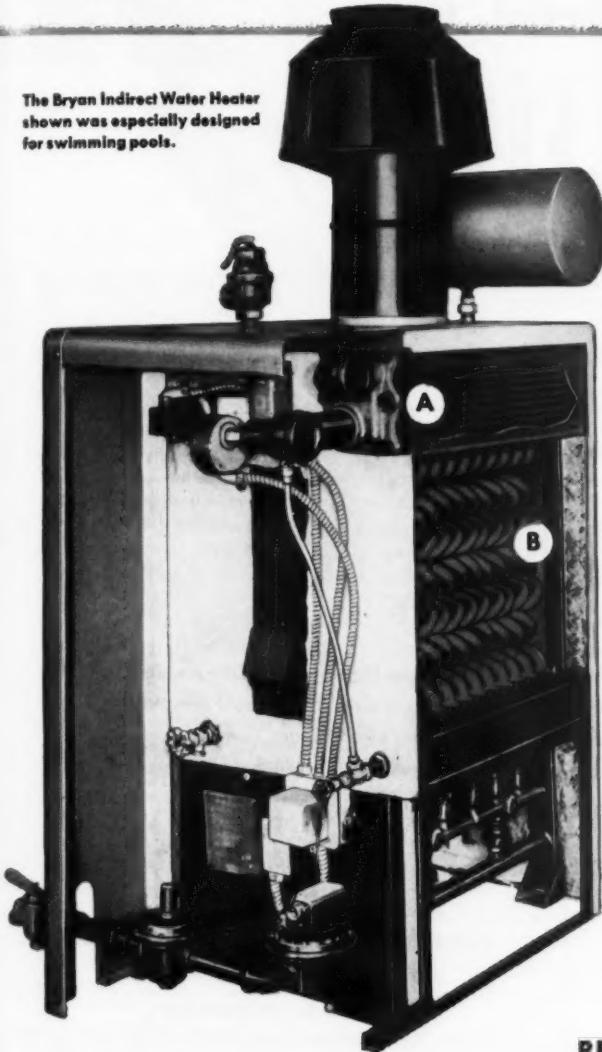
Founded by Paul Revere in 1801
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"For maximum heat transfer and long service NOTHING CAN BEAT REVERE COPPER TUBE"

The Bryan Indirect Water Heater shown was especially designed for swimming pools.



says O. C. Skinner, President
BRYAN STEAM CORPORATION
Peru, Indiana

"Revere Copper Tube has been the big reason why our boilers have been so successful ever since we introduced them 30 years ago. Copper transfers heat more than five and a half times faster than cast iron or steel. Heat from the oil or gas-fired unit is transferred through the copper tubes to the water in the tubes in jig time and with a minimum of heat loss.

"It was because of the performance turned in by Revere Copper Tube in our boilers that it became the unquestionable choice for our new indirect heater which is engineered especially for swimming pools. In designing this heater we must credit Revere's Technical Advisory Service with an assist. For it was through their suggestions that we were able to produce a more efficient, longer-lasting heater at the least possible cost."

So when you buy a Revere Product, whether it be copper tube, brass strip or an aluminum extrusion, remember: Revere service does not end with the bill of lading. Why not call in Revere to "trouble-shoot" your problems?

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

A This heat exchanger is made of heavy Revere Copper Tube with a bronze head bolted to the boiler shell. With this type of indirect heating flames cannot come in contact with the tubes carrying pool water. And since the temperature in this exchanger is below the critical point at which hardness scale readily forms, scale deposits are practically eliminated. This means longer heater life with higher heater efficiency.

B Boiler tubes of $\frac{3}{4}$ " and 1"-16 gauge seamless Revere Copper Tube act as primary heat exchanger between burner heat and boiler water. And, should it be necessary after long service, to replace the tubes, it can be done in a few minutes by anyone handy with tools.

In addition to the heater shown above Bryan also makes heaters and boilers in sizes from domestic types to 50 h. p. units for industrial uses. All use enduring Revere Copper Tube.



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**In the eighteenth century,
when wood was the basic
industrial material, the
Spoon Bit* was
a prime cutting tool**



*...in our present
aluminum age this*

**GARRETT
"FAMOUS BRAND"****

is industry's favorite



***THE SPOON BIT**
a popular French
woodworker's tool in the
18th century, has been
traced back to ancient times.
It revolved in either
direction to cut chiefly
downward. Its spoon-like
shape left no core in
the hole and removed most
of the shavings.

****PUTNAM END MILLS**, specifically designed for aluminum,
are now standard in 185 types and sizes . . . the most complete
and efficient line for the milling of aluminum. For catalog
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For the first time a complete line of standard end mills is available for the milling of aluminum. All eight Putnam styles are carried in the Garrett inventory, which also includes more than 100 other famous brands of tools and industrial supplies. If you want the finest service, too, whatever you need, "Get it from Garrett!"

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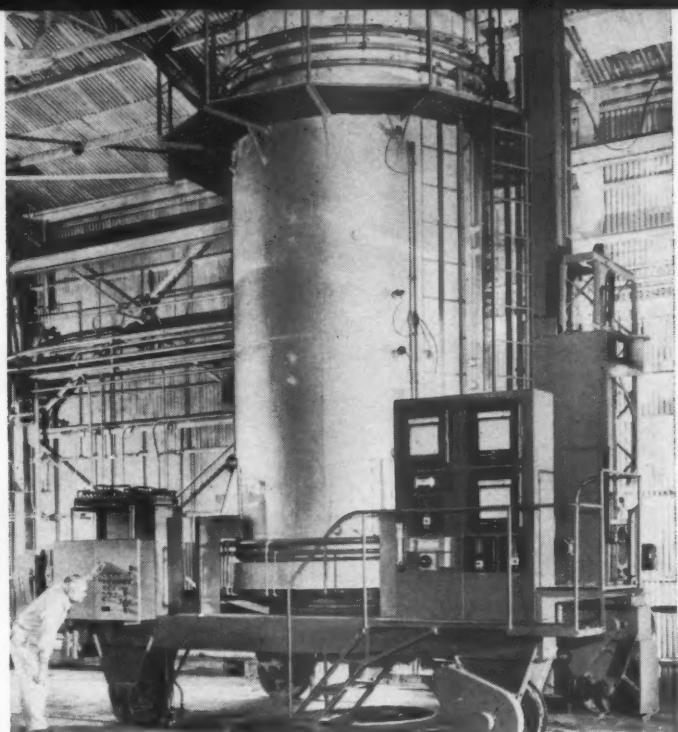


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WESTERN INDUSTRY — July 1957

Build-it yourself heat treat furnace

Cal-Doran solved its problem of treating parts 16 ft. long by building this special furnace. Here's why and how they did it.



THE many new products and projects springing out of the West have created demands for special types of equipment.

In many cases, this process equipment is not available commercially. What, then, are you going to do?

California-Doran Heat Treating Co., Los Angeles, solved its problem of heat treating parts 16 ft. long by building its own furnace. Cal-Doran engineers took two Inconel (International Nickel Co., Inc.) nickel-chromium alloy retorts from a pit furnace six feet long . . . cut the bottom off one, inverted the other, added a two-foot extension to it, and welded the whole assembly into one unit 16 ft. tall and 42 in. in diameter.

A permanent cover was added at

the top and the whole unit placed on a motor driven car running on rails. Control mechanisms, combustion equipment, piping and hoisting apparatus were built around this shell. This retort is suspended from the furnace roof by 16 hanger bars made from 1/4-in. Inconel flats.

The result is a furnace 24 1/2 ft. high (including the car) that meets aircraft industry specifications. Temperature variations within the furnace are maintained within plus or minus 3 deg. at a controlled temperature of 1,550 deg. F. and plus or minus 4 deg. at a controlled temperature of 1,700 deg. F. Atmosphere gases can be either endothermic or exothermic.

This latest installation joins a number of other Cal-Doran furnaces. In

its modern heat treating room, Cal-Doran has equipment for handling quantity production of small parts in semi-automatic batch furnaces, as well as parts up to 16 ft. long and 40 in. in diameter (48 in. in certain processes) to a weight limit of 6,000 lb. net per batch.

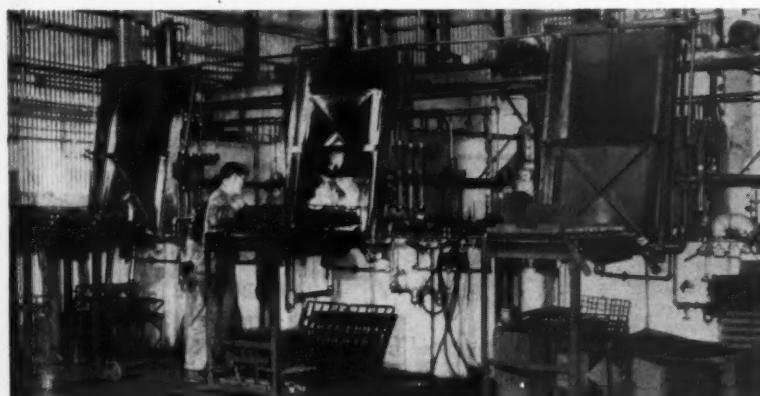
Versatile equipment for many jobs

Equipment includes three Surface Combustion "All-Case" furnaces, two of which operate in the 1,400-1,750 deg. F. range for gas carburizing, dry cyaniding, carbo-nitriding, carbon restoration, bright hardening or any of the other heat treatments performed with controlled atmospheres.

One of these two units is equipped with heating facilities in the quench tank for mar-tempering. The third furnace in this group is used mainly for tempering operations.

On all three furnaces, the complete cycle of heating, soaking and quenching is done under the controlled atmosphere without danger of contamination. A loaded work basket is pushed into the entry vestibule, which is above the quench tank and is separated from the heating chamber by an internal door.

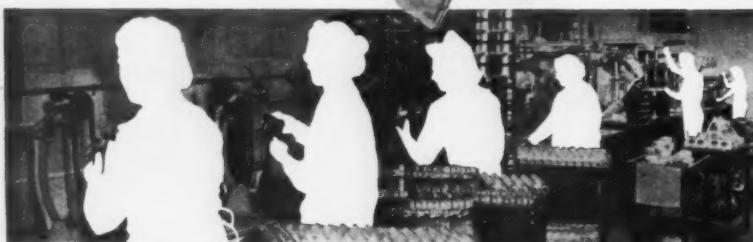
After the vestibule is purged of air entering with the work, the loaded basket is pushed through the internal doorway into the heating chamber. After heating and soaking for the prescribed time, the basket is lowered into the quench tank and removed. Quenching oil is circulated through and



BATTERY OF THREE Surface Combustion gas-fired radiant tube furnaces handles high production of small bulk parts under the protection of controlled atmospheres.



these shapes . . .



REPLACED THESE PEOPLE

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(TO DESIRED SPECIFICATIONS)

save labor costs

THE

ULTRA SHEEN WAY

on metal and plastic parts . . .

Eliminate labor

by automatically finishing
thousands of parts in minutes . . .
close tolerance no problem.

AVERAGE COST FOR
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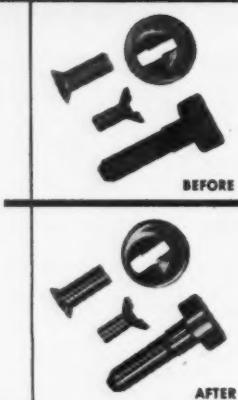
AVERAGE COST THE
ULTRA SHEEN WAY **1c ea.**

HAVE YOUR SAMPLE PARTS PROCESSED
YOU'LL BE GLAD YOU DID . . .

send for complete catalog and data on barrel metal finishing



... for more details, circle No. 31 on Reader Service Postcard



Dept. A-1

7031 Darby, Reseda, Calif.

around the work by pumps to insure rapid, even and uniform cooling.

Also in this room is a pit furnace for handling larger and more bulky work. Parts up to 48 in. in diameter and six feet long can be suspended from stainless steel fixtures which are attached to the top of the furnace just below the sealing cover. Loading and unloading are done with an overhead crane.

Like the batch furnaces, this unit can do bright hardening, gas carburizing, carbon restoration, carbonitriding or any of the other types of heat treating done with controlled atmospheres. It is a Surface Combustion design, heated by 16 U-type radiant tubes cast from Type 330 stainless steel. With a forced convection fan located in the bottom of the furnace, it has single zone temperature control. Either a lining shield or solid wall work baskets are used to control circulation.

Keeping pace with volume treating

Besides the equipment in this new heat treating room the company has facilities available for many other heat treating operations. This includes neutral salt bath furnaces, conventional box type batch furnaces for pack carburizing, annealing and hardening, as well as a Lindberg vertical radiant-tube carbo-nitriding furnace, and a radiant tube controlled atmosphere furnace with a refrigerated atmosphere quench.

To keep pace with the volume heat treating, Cal-Doran has a number of continuous hardening units of which a gas-fired, roller hearth Knapp furnace with quenching elevator in the conveyor line is the largest. To supplement its four-car bottom furnace for annealing and normalizing, a pusher hearth furnace is being installed which will be capable of handling 6,000 lb. per hr. and can be adapted to low temperature draws.

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LISTING ON PAGE 68

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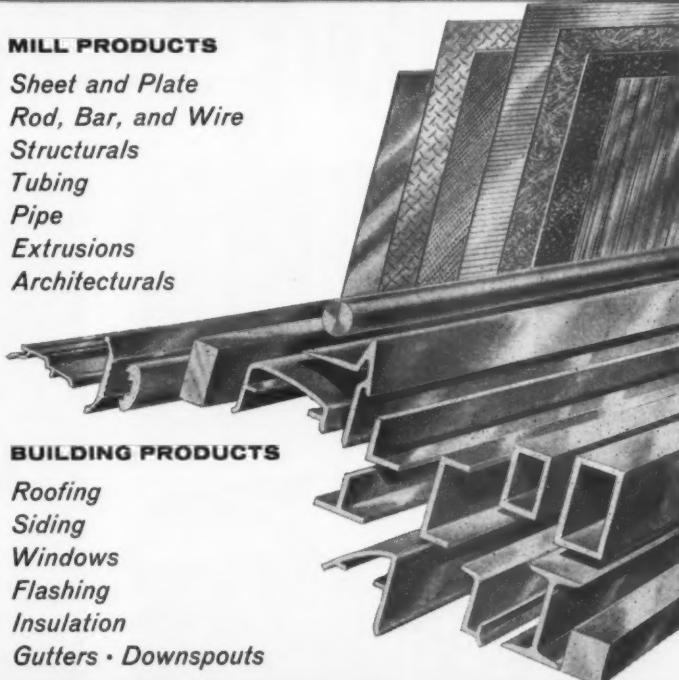
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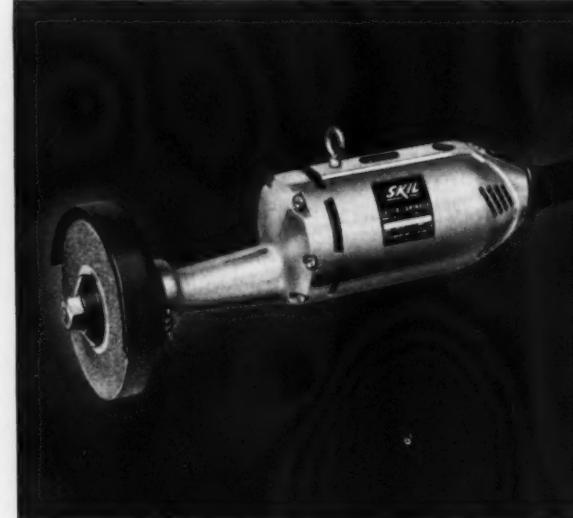
Saves \$100 per unit

Griffin Tank and Welding Service of Dallas, Texas, custom builds geographic photographic equipment. This equipment must be light-proof, weatherproof, dustproof and air tight. "When SKIL drivers were substituted for hand tools for fastening, we saved over \$100.00 per unit, and quality improved tremendously," says C.B. Jones, Chief Engineer.

Saves one operator

At Mercury Engineering Company, Milwaukee, Wisconsin, two men formerly handled the job above—drilling a $1\frac{1}{8}$ " hole in 16" steel. Then a SKIL Model 163 was tried. Now, one man not only drills, he also reams, taps and hones. "We always had good experience with all models of SKIL drills," says Ted Curtis of Mercury.

Metalworkers SAVE with SKIL tools



Saves \$100 per week

"Our new SKIL Shear paid for itself in the first week," says J.M. McLain, owner of J.M. McLain & Sons Trailer Company, Houston, Texas. "In using other makes of shears we found that maintenance costs were about to run us out of business. Some operations were cut from 30 minutes to $1\frac{1}{2}$ minutes. My men like SKIL shears because they are adaptable and easier to handle."

Write SKIL direct for free literature and the name of your nearest distributor.

Made only by SKIL Corporation, 5033 Elston Avenue, Chicago 30, Illinois. In Canada: 3601 Dundas Street West, Toronto 9, Ontario. Factory branches in all leading cities.

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With Model 142 you can grind more types of materials than any other grinder. Engineered for the toughest work. No matter what you have to grind, fasten, saw or drill, there's a SKIL tool that can do the job faster, better or cheaper. Let your SKIL distributor show you why. Let him show you the speed, power, versatility and ease of handling of all SKIL power tools.

SKIL
PORTABLE TOOLS

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Selected production and maintenance ideas for Western plant operating executives



Space saving by stacking wire container loads with a walkie-type stacker.

Revised warehouse layout, handling results in 25% space savings

SPACE SAVINGS of from 20 to 25% have been achieved by Boeing Airplane Co. by revising its warehouse layout and methods of handling stock.

The handling part was achieved by the addition of two walkie-type stackers. 80 sections of pallet racks and about 200 wire collapsible containers.

Formerly, practically all stock in the warehouse area was hand-handled. Loads were not unitized. Now, three different types of storage—as dictated by items being stored—are in use.

Items that can be stacked one on top of the other without damage are stored pallet-on-pallet. Unwieldy loads or weak loads that will not withstand stacking pressure are stored on pallet racks. The self-nesting wire containers are used for small items or boxes that do not lend themselves to palletizing.

Two Moto-Truc walkie-type stackers, with lifts to 120 in. provide mobility to the warehouse area. They are easy to maneuver in narrow aisle layouts so Boeing gained space in that respect. But the prime advantage of the walkie-type stacker is that any warehouseman who happens to be available when a load needs moving can operate the unit.

If a rider-type stacker or lift truck had been used, Boeing reports, two men would be tied up to get a load—one warehouseman to show the truck operator the correct load to move, and an operator for the truck.

Assisting Boeing engineers in selection of the stackers and helping engineer the operation to best utilize the vehicles was Mechanical Handling Co. of Seattle.

Versatile Jeep takes short cuts to put out fires

YOU CAN TURN the versatile Jeep into a powerful plant protection tool—as did the Firestone Tire & Rubber Co. of Calif., Los Angeles. The photo below shows Firestone's Jeep fire engine, which is small enough to ride in plant elevators and negotiate the aisles of all floors, yet complete with pump, hose, chemicals, water tank and ladder.

Built on a Willys Jeep chassis to the specifications of Firestone's engineering department, the "mighty midget" was constructed by Crown Coach of Los Angeles, which builds fire trucks for city and county.

The new junior fire engine carries the following equipment:

- Two-way radio
- Asbestos suit
- Two oxygen masks
- Lanterns
- Siren and red lights
- Axe and crowbar
- Combination straight and fog nozzles
- 24-ft. extension ladder
- 150 lb. dry chemicals
- 150 gal. of water
- 150 ft. 1 1/2-in. hose
- 100 ft. 3/4-in. hose
- Two 15 lb. CO₂ extinguishers
- Pump to draw from any water supply and throw a stream at 200 lb. pressure

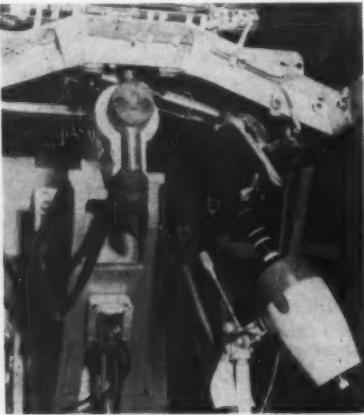


This baby's loaded—with everything to fight a good-sized fire. And it really gets around, being small enough to ride freight elevators and negotiate narrow aisles.

TV camera replaces human 'bird watcher' under welding stage

A SMALL TV camera has replaced the human eye in watching structural spotwelding on the underside of large aluminum panels at Ryan Aeronautical Co., San Diego, Calif.

This small General Precision Laboratory closed-circuit TV camera stares



"I've got my eye on you!" says this TV camera as it stares untruly—and accurately—at the welding operation.

untiringly—and with electronic accuracy and clarity—at the welds, transmits a magnified report via coaxial cable to a 17 in. monitor screen at the side of the welder.

No longer must a human "bird watcher" be stationed beneath the welding platform to assure the highest quality; at a glance, the single operator now sees the condition of both top and bottom welds.

Because of the heat and pressure necessary to accomplish spotwelds, the copper alloy welding tips soon pick up aluminum from the "clad"—an outer layer of pure aluminum which covers the harder alloy core.

Since clad is the protective coating which prevents corrosion of the metal, it is important in aircraft manufacture that this "pick-up" be kept to a minimum and both welding electrodes cleaned when the deposit becomes noticeable. Through the use of television, the welder now can stop the moment the first sign of electrode pick-up appears on the screen.

The TV camera, set up on an arc with simple bracketry, moves to coincide with the longitudinal and crosswise motions of the panel. Remotely powered, it is operated by a flip switch and follows the line of welding in any

direction. Two lenses provide either detailed close-ups of each spotweld or wide angle views which enable the operator to remove his work from the narrow clearance between the welding tips, without bumping.

A combination of fluorescent and incandescent floods are used to assure proper lighting without reflection from the aluminum panels or spotwelds.

New type machine slashes wire-cutting time by one-third

NORTH AMERICAN AVIATION has slashed its wire-cutting operation by one-third by use of a new type wire-cutting machine.

This is the Artos T.A. 20-3S which will measure, mask, strip, lug, and terminate wire in accordance with North American Aviation and U. S. military specifications.

Research and development of the T.A. 20 machine, conducted by Artos Engineering Co., began in December 1954 at North American's Los Angeles facility. One year later the prototype unit was tested at the manufacturer's plant by North American representatives.

Twenty-four design modifications were incorporated by Artos from this initial test. This machine then was delivered to the company's L. A. production department laboratory for final proving before production use.

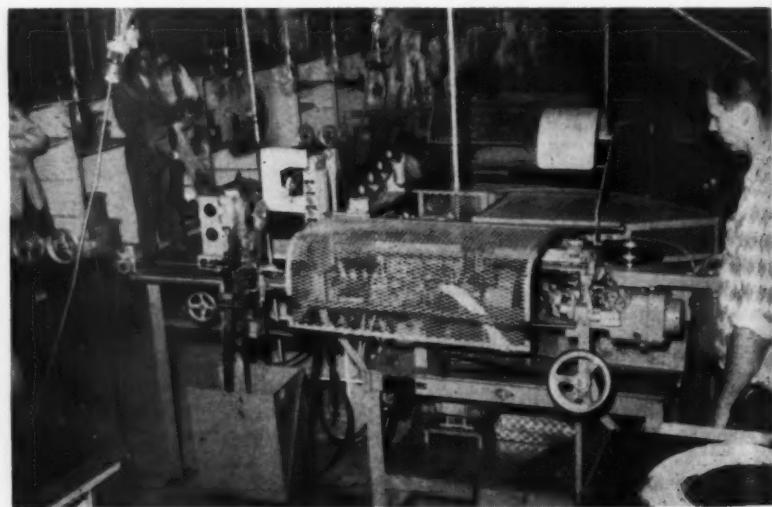
The first production model of the T.A. 20 was received at NAA's Fresno division on September 20, 1956, and

the second model was received a month later. The machine released three workers—one stripping, one numbering, and one lugging operator—for other duties on the wiring line.

The machine's main motor runs from a 440-volt outlet, while its type holder heater element runs from a 110-volt outlet. The stamping unit and wire puller are regulated by 20 lb. of air pressure. The machine handles all type of wires ranging from 20 to 14 gage with an average capacity of seven wire per min. in lengths of four to 250 in.

In one 26-week period, Fresno's two machines were operated 16 hr. a day, five days a week during which time approximately 2,000,000 wires were measured, stripped, numbered, lugged, and cut.

Only a few hours of individual instruction were required for proper machine operation and employees were considered skilled operators after one month of on-the-job training.



This Artos TA 20-3S will measure, mask, strip, lug and terminate wire in accordance with any specification.

Here's a 10,000-lb lift truck that's Right for the job!

THE NEW

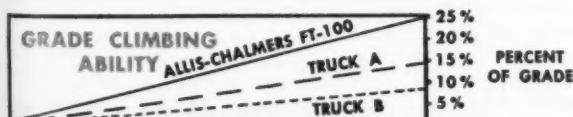
ALLIS-CHALMERS

MODEL FT-100

with EXTRA POWER
PERFORMANCE
RUGGEDNESS



Heavy-duty industrial engine is built by Allis-Chalmers specifically for lift truck service. This large (230-cu in. displacement) engine provides high torque at normal engine speeds, gives the truck power enough to carry a full load up a 25-percent grade. User records show Allis-Chalmers industrial engines not only outperform others, but operate many hours longer before overhaul. Available in diesel, gasoline or LP gas.



Workingest truck in its class. The FT-100 has the extra weight, traction and operator controls for superior performance. Its added weight is well placed to provide stability for heavy loads and high lifts. Excellent traction means extra usefulness, ability to work under adverse conditions. Controls are simple and positioned much like those in a car for easy handling. This new truck has standard ITA "shaft-type" fork mounting

Outside turning radius: 100 in.

Over-all height: 83 in.;
stacking height: 110 in. with standard mast

Width: 52 in.; length (less forks): 107 1/2 in.

which permits using a wide range of attachments.

Power steering and power shift transmission are available as extra equipment.

Rugged industrial-type frame. Welded construction assures complete alignment of parts for reduced maintenance and longer truck life. New roller-mounted "extra lift" mast provides up to 19 percent higher lift without increasing the over-all lowered height.

The FT-100 has quality construction and functional design that includes unusual accessibility for service and maintenance. Let your Allis-Chalmers material handling dealer tell you more about this 10,000-lb lift truck that's right for the job. Send for Bulletin BU-334A.

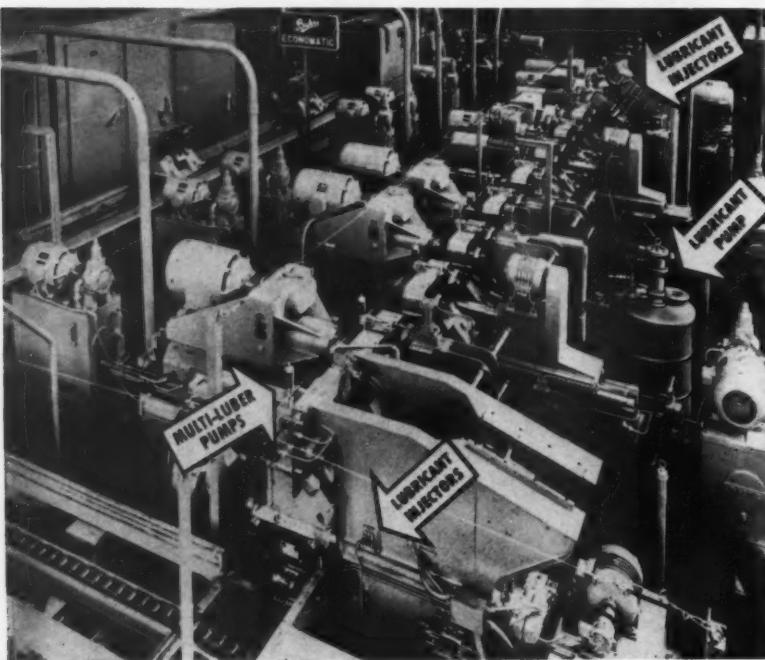
ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



... for more details, circle No. 34 on Reader Service Postcard

KNOW-HOW NOTEBOOK .. Part 1, continued



This battery of automatic lubricating systems not only assures proper lubrication, but will increase machine life and reduce rejects.

Automatic lubricating systems up production, machine life

WANT TO INCREASE bearing life up to 1,500? Slash rejects up to 80%? Cut lubrication consumption 50%?

These benefits—and more—can be the result of introducing modern automatic lubricating systems, reports Alex P. Fox, vice president, Lincoln Engineering Co.

With the techniques of automation expanding throughout industry, with increasing emphasis on quality control, and with machines precision-built to operate at greatly increasing speeds, the old stand-by—the oil can—is obsolete.

The lubricating equipment manufacturers are now providing positive dependable devices to perform lubrication automatically.

These devices can be controlled by any one of three optional methods: (1) Mechanical Control—utilizing motion of the machine to actuate an air valve which, in turn, cycles the system; (2) Electrical Control—utilizing an adjustable time clock and sole-

noid valve; and (3) Manual Control—if desired—using an air valve actuated at machine operator's discretion.

Another new group of centralized lubricating systems, called the Multi-Luber, is being widely received by industry. These systems are available in vacuum-operated, air-operated and manually-operated models.

Centralized lubricating systems are now available on original equipment ranging from fork lift trucks and automated lathes to textile machinery and over-the-road truck trailers.

Mr. Fox states: "In the final analysis, industry must dissociate lubrication from maintenance. This is the basic approach to acquiring the benefits made available through modern lubricant application systems. Maintenance is an intermittent operating function, the need of which is indeterminable, and its occurrence unpredictable, whereas lubrication is a continuing operating function . . . its need is imperative and its occurrence can be pre-determined."



BAY STATE GRINDING WHEELS
are available to you through
the following Western distributors:

ARIZONA

Flagstaff: Arizona Welding Equipment Co.
Phoenix: Arizona Welding Equipment Co.,
DiEugenio Tool Center, Inc.
Tucson: Aweco Supply Co.

CALIFORNIA

Hawthorne: Sonnet Supply Co.
Los Angeles: Barker Foundry Supply Co.,
E. A. Key Co., Ladish Pacific Division,
Republic Supply Co. of California.

San Diego: Bailey Equipment Co.
San Leandro: Republic Supply Co. of
California.

Torrance: National Supply Co.

COLORADO

Cripple Creek: Union Supply Co.
Denver: Union Supply Co.

IDAHO

Parma: Transmission Products Div. of
Parma Water Lifter Co.

Pocatello: Pocatello Plumbing & Industrial Supply.

Boise: Spencer Supply Co.

NEVADA

Las Vegas: Inland Service & Supply Corp.,
McQuary Supply Co.

NEW MEXICO

Carlsbad: Carlsbad Supply Co.

OREGON

Eugene: Harmer Mill & Logging Supply
Company.

Portland: Harmer Steel Products & Supply
Co., Wall-Western, Inc.

UTAH

Helper: Carbon Transfer & Supply Co.
Salt Lake City: Production Tools, Inc.

WASHINGTON

Moses Lake: Columbia Basin Machine Co.
Seattle: J. E. Haseltine & Co., Inc.

Spokane: Kilmer & Supply Co.

Tacoma: Webster-Robinson Machine &
Supply.

BAY STATE ABRASIVES



Bay State Abrasive
Products Co.
Westboro • Massachusetts



Working with foreman Bill Todd (right) of Whitin Machine Works, Whitinsville, Mass., Bay State distributor, Vic Erickson (left) of Johnson deVon, Worcester, Mass., helped cut Whitin's grinding costs thousands of dollars per year.

They made 1 wheel do the work of 12



Centerless grinders at Whitin Machine Works were handling parts $\frac{1}{8}$ " to 5" diameter in bronze, brass, aluminum, cast iron, Meehanite and various steels. Short runs averaged between 3 and 300 pieces. With a dozen different wheels in use, the opportunities for savings on wheel changes alone are tremendous.

Department foreman Bill Todd wanted to simplify. He was looking for a single all-purpose wheel that would eliminate all wheel changes due to varying job requirements.

For a while it looked as though he was asking the impossible. But Bay State distributor Vic Erickson went to work with the sales engineering staff at Westboro and came up with a solution . . . a single wheel that handles the entire range of sizes and metals with only one dressing an hour. Finishes average #16RMS . . . go as fine as #2 with special care.

Whatever your company's abrasive problems may be, you'll find Bay State representatives ready to help and competent to work out practical solutions.



BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Mass.

Branch Offices and Warehouses: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh.

Distributors: All principal cities. Bay State Abrasive Products Co. (Canada) Ltd.,

Brantford, Ontario

... for more details, circle No. 35 on Reader Service Postcard

Upside down band saw cuts asparagus under water

INGENIOUS USE of a tool used in metal and wood fabrication has saved California packing plants much time

and money in their vegetable packing operation.

They have eliminated an extra step

IT'S THE *MOST

ANNOUNCING
the Sensational **NEW**
Miller
GOLD STAR
SR

It DELIVERS maximum arc stability for:

- Sounder, denser welds — and more of them — in less time, with . . .
- ALL electrodes, in . . .
- Any and all positions

How is this performance possible? THE MILLER GOLD STAR SR introduces a . . .
NEW transformer
plus
NEW weld stabilized current
plus
NEW completely sealed semi-metallic rectifier

★★★★★★★★★★

Tested across the country by practical, critical, hard-bitten working welders, here's what they say about the new Miller GOLD STAR SR:

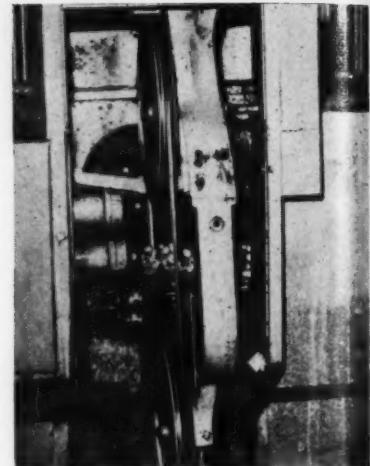
"It's the DC performance I've always wanted"
"here's DC welding current that's . . . perfect!"
"positively handles ALL electrodes better"
"best deal I've seen for v and o work"
"easiest arc starting in my experience"
"smoothest arc I ever used . . . and . . . quiet!"
"it's just plain the **MOST**"

Complete particulars on the MILLER GOLD STAR SR, including inert gas and automatic fixture welding, is now available on request.

"... If it's Miller you know it's the finest . . ."

miller Electric Manufacturing Company, Inc.
APPLETON, WISCONSIN
distributed in Canada by CANADIAN LIQUID AIR CO., LTD., Montreal

... for more details, circle No. 36 on Reader Service Postcard



Asparagus is laid on a washing conveyor which runs under streams of water. The band saw is mounted midway in the line, cutting stalks to uniform lengths as they pass.

in the packing operation by turning a Rockwell-Delta band saw upside down and installing it on an asparagus washing line. The asparagus is cut to uniform length as it is washed.

Asparagus is laid on the washing conveyor which runs under streams of water. The band saw is mounted midway in the line, cutting the stalks to uniform length as they pass.

The saw is turned upside down so that water won't run into the motor, and it is mounted in a sheet metal enclosure. The blade runs parallel to the conveyor. As the asparagus passes, it cuts off the ends extending over the edge of the belt. A rubber-tired wheel rides on the belt, holding the stalks down while they are cut. Two streams of water, one above and one below the conveyor belt, keep the blade clean.

A standard skip-tooth blade is used in the saw which is started and stopped with the conveyor belt. The saw requires no attendant. The Delta saw used on this job stands up in constant use in the wet atmosphere.

How to move logs 250 feet over soggy ground

HOW DO YOU MOVE logs 250 ft. over soggy, unstable ground when it's impossible to use crawler-mounted equipment and conventional derricks or booms?

A Montana mining company solved the problem with an Ingersoll-Rand size 20NM2D double drum hoist mounted on a flat car, so it can be

WESTERN INDUSTRY — July 1957

... for more details, adv. opp. pg., circle No. 37 on Reader Service Postcard ➤



EUTECTIC

Welding News

PUBLISHED BY EUTECTIC WELDING ALLOYS CORPORATION, 40-40 172 STREET, FLUSHING 58, NEW YORK, N. Y.

XYRON 2-25 REPAIRS RR DIESEL ENGINE SAVES \$10,800, WEEKS OF DOWNTIME

A large break in the first cylinder of a 600 horsepower diesel engine almost resulted in the loss of \$10,800 by a Midwestern railroad. Attempts to repair the engine with conventional high heat welding materials failed because the block was thoroughly dirt and oil soaked and its tremendous size made pre-heating impossible.

The railroad's maintenance foreman was ready to recommend scrapping the engine when Eutectic's District Engineer suggested welding with patented Xyron 2-25, "Eutectic's" newest and most advanced electrode for all types of grey and alloyed cast iron.



Fig. 1

Repair was begun by veeing out all broken surfaces with Eutec-ChamferTrode, high speed gouging electrode for all metals. (Fig. 1) Gouging with ChamferTrode provided a good surface for deposits of Xyron 2-25 and burnt out many of the impurities in the casting. After the broken parts were reassembled on the engine block, Xyron 2-25 was used to tack weld. (Fig. 2).



Fig. 2

Welding machine was set at 100 amps, DC reversed. The weldor then used a stringer technique with short arc to deposit 2" passes of Xyron 2-25. Peening after each pass relieved stress and slag was easily removed.

Final results were excellent. Xyron 2-25 produced dense, smooth, porosity free deposits at lowest amperages. (Fig. 3) Fast repair with Xyron 2-25 saved railroad \$10,800 replacement cost and avoided weeks of downtime.



(A-71)

HIGHEST STRENGTH JOINTS WITH EUTECTRODE 201



Welded with patented EutecTrode 2101, the aluminum tine joints on this cement block unloader are up to three times stronger than joints of conventional aluminum electrodes. Loads of close to a ton cause the tines to dip as much as eight inches without cracking. EutecTrode 2101 quickly fabricated the block unloader, produced smooth solid deposits with good color match and high resistance to corrosion. The first aluminum electrode with an extruded flux coating, EutecTrode 2101 does not spatter or fume, produces a quiet arc at lowest amperages. EutecTrode 2101 outperforms all conventional aluminum electrodes. (A-72)

EUTECTRODE 680 AC-DC AVERTS 10 WEEK STOPPAGE



A Tennessee stamping plant faced an 8-10 week production stoppage because of a cracked shaft on a 340 ton press. Replacement was estimated at \$15,000. But downtime was averted and replacement cost saved by using EutecTrode 680 AC-DC and Eutec-ChamferTrode to repair the shaft at a cost of only \$37 in materials. Eutec-ChamferTrode, high speed gouging electrode, was first used to vee out the crack, which extended 6" through the 12" shaft. EutecTrode 680, patented high tensile electrode for very high alloy and carbon steels, was then applied. EutecTrode 680 welds were applied at lowest amperages. (A-73)



In answering industry's requests for technical data, Eutectic's research and engineering staffs help industry save thousands of dollars each year. Your questions, like these below, will be answered without obligation by Eutectic's Technical Information Service.

Q. My company's welding manual makes reference to the use of solder in the repair of lamp socket contacts. EutecRod 157 with EutecFlux 157 was recommended to us for this application. Will you advise? We would like to incorporate this information in our manual for future use. The fact that this soldering is performed by unskilled personnel should be considered.

A. EutecRod 157 is considered an ideal recommendation. Since this alloy has an extremely narrow plastic range, rapid solidification takes place, assuring a good build-up. It is therefore easier to handle by the unskilled. Deposits are harder and have higher electrical conductivity than conventional solders. This means greater resistances to pitting and general wear. Since the alloy has a higher solidus temperature, the possibility of plasticizing the build-up if accidental arcing occurs is virtually eliminated. Contacts also will remain bright and clean since EutecRod 157 does not contain lead or other elements than darken with age. Melting point is approximately 430° F. Electrical conductivity is 18 percent.

Q. What is the electrical resistance of EutecRods 180, 800, and 1804?

A. Electrical resistivity of all three is almost identical in that values of 23/24 microhms per cubic centimeter are obtained on all tests.



Eutectic Warehouse—Service Centers
1108 Blake Street, Berkeley 2, Calif.
1414 South Street, Phoenix, Arizona

EUTECTIC WELDING ALLOYS CORPORATION 40-40 172nd Street, Flushing 58, N.Y.

Gentlemen:

I would like further free information on the following:

- A-71 A-72 A-73
 Free 170 page pocket Welding Data Book

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Business Address _____

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Here's *Lufkin*



"*talking turkey*"

ÇALIŞMA İLE İLGİLİ TALİMAT?

Literally, talking Turkey, or Turkish—for this is one of the Operating and Lubrication Instruction plates made up for a recent order . . . 15 carloads of Lufkin 10-foot stroke geared pumping units now in heavy-duty service in Turkish oil fields. This world-wide recognition of Lufkin stamina has very real meaning to buyers of industrial gears. For Lufkin supplies rugged gear assemblies to a wide range of industries. And every Lufkin gear inherits all the strength and knowledge gained in a half-century of building gear assemblies for the toughest service known—oil field pumping units, with their continually reversing shock loads, which operate 24 hours a day, month after month, under the most severe operating conditions. This is the stamina, the trouble-free service, you get when you use Lufkin Gears for Industry.

Lufkin

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KNOW-HOW NOTEBOOK . . . Part 1, continued



The hoist is mounted on flat car, and the operator is protected from possible cable breakage by a wire screen in the wooden upright.

moved up and down the edge of the stock pile.

And the company realized about a 200% saving—about \$103.95 per day at the present rate of operation.

In operation, one man operates the hoist, while two men attach a chain sling to the logs at one end of the 250-ft. stretch and two men detach the sling at the other end.

This five-man crew can move as many logs in two days as it formerly took an eight-man crew three days

to move by hand methods. Cost by the hand method was \$356.40 for the same number of logs as can be moved in two days with the hoist for \$148.50. The hoist method thus saves \$207.90 every two days—or \$103.95 per day.

Capacity of the hoist system as operating is five carloads of logs per eight-hour shift. The system could handle more if not limited by the capacity of the chain conveyor which moves the logs after they have been delivered by the hoist.

New valve casting method saves 30% time, material

A 30% SAVINGS in time and material has been realized by Interstate Engineering Corp. in El Segundo, Calif., as a result of utilizing a new casting technique to produce heavy butterfly valve bodies.

Formerly, the butterfly valve bodies were fabricated—a time and money consuming operation.

Now, 30% savings are possible by using the Electric Steel Foundry Spuncast technique of centrifugal casting steel units. At Electric Steel Foundry's plant in Portland, molten steel is spun at speeds varying from 800 to 2,000 rpm., depending upon size and shape of castings. This process imparts a high quality and homogeneous structure to the metal.

Big advantage of the Spuncast process is that several castings of round or cylindrical shapes can be cast in one mold. A "stick" of six valve bodies is Spuncast in one operation for Interstate. Each valve body weighs 180 lb. as cast.



GEARS FOR INDUSTRY
THE **Lufkin LINE**
OIL FIELD PUMPING UNITS

WATER FLOODING IN AUSTRIA

N. van Wingen, one of California's best known Petroleum Engineering Consultants, was wingin' his way to Wien, Austria, when these words were written.



V. J. Fawcett

"Wien" goes with Wingen, words, written and water flooding! Immediately you will see how an attempt at alteration is all upset by reporting that Nick was on his way to Vienna (as you and I know it), but on their maps and at the Austrian Airport it's "Wien"—Queen of the Danube.

Well known for his experience and programming of water-flood engineering and procedure in U. S. Oilfields, Nick was called to Vienna in this connection to consult on a preliminary study of water flooding Austrian Oilfields. There are five separate pools under consideration. Average producing depths are about 4,000 feet.

Got a glimpse of these oilfields while enroute to Ankara on our Turkish Petroleum Job. And incidentally, prior to installation of Lufkin Eqt. Nick made reservoir studies for Turkish Petroleum.

Traveling on a very tight schedule, van Wingen boarded his plane Wed. morn June 5th. Ar. Vienna Fri., June 7th—full day N. Y. City June 6th. Returned L. A. via Polar Route June 26th. And just as 'tho' Nick didn't deserve a day of recuperation, his appointment schedule read: Due Coolinga, 8:00 a.m. June 27th

N. van Wingen

Lufkin FOUNDRY
& MACHINE COMPANY

... for more details, circle No. 38

KNOW-HOW NOTEBOOK

Part 1, continued



Leon S. Peters (left), president of Valley Foundry & Machine Works, Inc., watches aluminum frame going through the speeded-up milling process.

Special adapter cuts machining time from 30 to 5 minutes!

CUTTING MACHINING TIME on aluminum alloy filter plates and frames from 30 to 5 minutes is quite a feat!

And that's what Valley Foundry & Machine Works, Inc., Fresno, Calif., has done with an adaptation it has made on a standard Bullard vertical milling machine.

Valley Foundry took off one of the heads and attached to this a special adapter with a 10-hp. motor, V-belt drive, and a milling head. This head operates at 1,800 rpm. with two tungsten carbide cutters.

The speed of the boring mill table has been reduced considerably by use of an individual drive motor. The table rotation now is approximately one-half revolution per minute.

In the actual operation, a filter plate or frame is clamped to the boring mill table. As the table rotates, the milling cutters machine the surface. In one operation the cutters on the head are so set that the machine takes both a finish and rough cut. In this way, one side of a 36 x 36-in. filter plate or frame has been machined.

Normally, with a single tool cutter rotating the table, it would require approximately 30 min. to machine

one side of the plate, whereas Valley Foundry can now do it in 5 min. including mounting the casting and removing it off the table.

New acid trailer eliminates hazards of multiple handling

THE USE OF an acid trailer at Kennecott Copper Corp., Nevada Mines division in McGill, has eliminated the hazards of multiple handling of acid barrels.

Prior to the use of the acid trailer, it was necessary to transport concentrated sulphuric acid from a storage tank to cooling towers at the power plant in steel barrels.

The acid had to be loaded into the steel barrels from the central storage tank and then the barrels moved—two at a time—to the boiler room in the power plant. Here, they had to be unloaded, equipped with acid valves, reloaded and transported to the cooling towers. This lengthy process was repeated at intervals of 10 days.

Use of the acid trailer eliminates most of the dangerous—and unnecessary—handling of acid. Now the trailer is filled at the central storage tank and moved to the cooling tower where a drain valve is opened and the acid flows into cooling tower storage tanks.

The suggestion to use the acid trailer was submitted by McGill's general safety committee and put into practice by the mechanical-electrical department.



Joe Cvithovich makes up hitch on loaded acid trailer to pull it to cooling towers. In foreground are the old acid barrels formerly used for transporting the sulphuric acid.

Problem solved — automatic wrapping of wool blankets moving in one strip

AUTOMATIC WRAPPING of mineral wool blankets moving along in one continuous strip on a conveyor line was solved by the Mineral Wool Insulation Co., Fontana, Calif., with the help of Sandvik Steel Inc.

Here's how the problem was solved so that the wrapping was cut apart at the proper space between blankets—often varying in length:

A remote control device was designed comprising (1) an electric eye at the beginning of the packaging line; (2) a one-in. steel-belt conveyor traveling at the same speed as—and parallel to—the packaging conveyor; (3) permanent magnets which are carried by the steel belt; (4) a Micro-switch control which operates the saw that severs the wrapping at the end of the line.

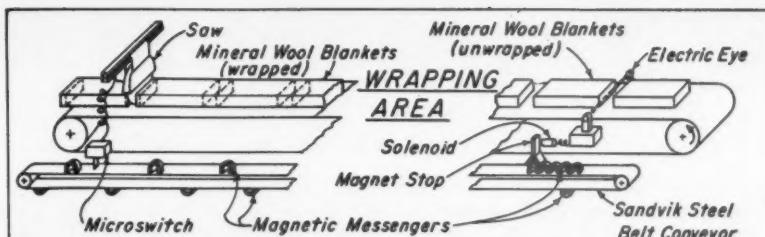
In operation, a stop holds back several magnets which have been placed on the steel belt. As mineral wool blankets travel along at the beginning of the packaging conveyor, the beam of the electric eye makes contact as spaces between the blankets pass between the eyes.

When this happens, the magnet stop is released allowing one "magnetic messenger" to pass through and be carried along on the steel belt, in time with the space on the packaging conveyor.

When the messenger gets to the Micro-switch, it triggers this device and operates the saw which cuts the wrapping apart, exactly at the space between the blankets.

The magnet adheres to the return strand of the Sandvik steel belt, is carried around to the tail pulley and gets in line with other magnets being held back by the stop.

Thus, wrapping is automatically cut apart without damage to the contents and without the need for human supervision. Similar arrangements may be adapted to other problems where a remote delayed action is desired or may be keyed to some initial phenomenon. Such a device may be particularly helpful when the initiating occurrence is of an uneven or irregular nature.

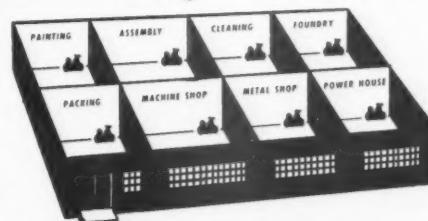


Schematic drawing illustrates how steel belt conveyor carries "magnetic messengers" which trigger saw to cut apart continuous wrapping of mineral wool blankets. Electric eye at beginning of packaging line releases magnets as spaces between blankets allow eye to make contact. Magnets travel in time with spaces, trigger saw as spaces line up with it. Magnets cling to return strand of steel belt and line up at eye-controlled stop.

KELLOGG-AMERICAN COMPRESSORS



...AIR
in every area...
where
and
when
you
need it!



There's nothing "free" about the old centralized, compressed air systems still used in many plants. Production engineers, plant supers and maintenance men are finding that every pipe and outlet is an actual or potential leak—and that every hiss is a dollar they'll miss.

Solution? Kellogg-American's "On-The-Spot" Air—where your compressor develops *only* the pressure required for a specific job, and gives complete flexibility to your compressed air system. With Kellogg-American's "On-The-Spot" Air program, only a couple of small motors are working for you. The savings in power alone pay for "On-The-Spot" Air in a year or two. Contact your *Shields-Harper* representative for information—"On-The-Spot."

FREE! Compressor selector slide rule—automatically selects exact size needed to fit your air requirements—write today:



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... for more details, circle No. 41 on Reader Service Postcard

40 BEST MANUALS ON HOSE AND COUPLINGS —yours for the asking

HOW TO CHOOSE AND USE the many types of industrial hose available today, along with the quick couplings that increase their application versatility—these are the facts that this month's WI self-service library puts at your fingertips.

Presented below are concise reviews

of the best manuals available today on this important group of plant operating products. By special permission of the manufacturers who published them, Western plant operating executives are welcome to their selection.

Simply check the listings to determine which manuals would be most

useful to you. Then circle appropriate key numbers on this month's WI Reader Service Postcard (page 85), and we will be glad to see that you obtain your selection promptly. We do request that you be selective, and not ask for all of the manuals. Note that this special offer expires Sept. 30.

64-page metal hose and tubing manual

Two basic types of tubing and hose—corrugated and stripwound—made of various metals, and flexible Teflon connectors are covered in this comprehensive catalog that includes dimensions, burst pressures, weights, bending diameters, installation suggestions and typical uses. Numerous pictures, drawings and charts furnish additional information. *The American Brass Co., American Metal Hose Div.*

... for your copy, circle No. 251

Facts on chemical-resistant couplings

Features detailed cutaway of this quick-connect, quick-disconnect coupling that handles acids, alkalies, solvents and high pressure steam; functions perfectly between -100 deg. and 500 deg. F., and can be subjected to lower or higher temperatures for short periods. Dimensions and ordering data for spare parts as well as complete couplings, plus facts on Teflon seals and other design details. Available also are similar manuals on the company's No-Spill couplings and those for use on gas and liquid line circuits in dispensing equipment. *Snap-Tite, Inc.*

... for your copy, circle No. 252

Condensed version of Aeroquip hose, coupling manual

Instructions for ordering, installation planning and assembly of this firm's hose, fittings, Socketless kits and self-sealing couplings appear in this abbreviated industrial catalog. Prepared for use in ordering Aeroquip parts, it has data on the standard industrial products and is designed primarily for use in the replacement field. Includes photos, series of "right and wrong" hose line installation sketches, numerous tables for quick reference. *Aeroquip Corp.*

... for your copy, circle No. 253

Facts on Stratoflex hose, assemblies, fittings

Catalog sections relate to products for all types of industrial applications, emphasizing three hose types: 211, single wire braid fabric covered hose for over the cover fittings, recommended for hydraulics, water, fuels, gasoline and other fluids and gases and for temperatures from -40 to 275 deg. F.; 212, double wire braid rubber covered hose for stripped cover fittings, recommended for hose applications requiring high working pressure, gases and fluids, and temperature from -40 to 200 deg. F., and 225, single wire braid rubber covered hose for over the cover fittings, particularly suited for railroads, road and farm equipment, and material handling trucks, for temperatures from -40 to 200 deg. F. Assembly instructions and data charts included. *Stratoflex, Inc.*

... for your copy, circle No. 254

Series of six U. S. Rubber hose manuals

Consists of six similar catalogs, each dealing with a separate type of hose and giving specifications, features, applications, and photos for several kinds within each category. Oil and gasoline marketing hose covers types for gasoline pumps; fuel oil or loading racks; liquid petroleum; for air, water and grease (Circle No. 255). Oil field hose for drilling and producing deals with rotary drilling; mud pump; vibrator, and auxiliary equipment hose (Circle No. 256). Steam hose bulletin discusses that for high, medium and low pressure service (Circle No. 257). Water hose—for discharge; discharge and suction; suction; agricultural suction; sand suction and discharge (Circle No. 258). Fire, mill and chemical hose—carbolized, dacron-reinforced, rubber-lined; cotton, rubber-lined; unlined linen; chemical engine; fire extinguisher, and care and maintenance (Circle No. 259). Air hose—for light, medium and heavy duty service; manifold lines; oxyacetylene welding. (Circle No. 260). *U. S. Rubber Co.*

... for copies of all six manuals, circle No. 261

30 pages of data on Titeflex metal hose

Covers Titeflex and Uniflex metal hose; standard pipe, flared tube and compression tube fittings; flexible metal conduit; bendable pipe; high and low frequency conductors, and other products in a complete line of flexible metal hose for industry. Specs, illustrations, application photos, diagrams and charts bring out pertinent facts. Completely indexed, with sections on installation, maintenance and ordering. *Titeflex, Inc.*

... for your copy, circle No. 262

Selection chart for Lok-Tite couplings

Four-page manual features illustrated selection chart and six-step picture series of assembly instructions. Pertinent facts on application, design features and packaging. Brief data on reusable hose couplings for medium and high pressure hose, as well as accessories—Flex-o-matic air couplers and nipples, fittings and splicers. *Lincoln Engineering Co.*

... for your copy, circle No. 263

Designing with Flexon flexible metal hose

How to design with flexible hose and how to select the right one for you are among the things this 12-page manual tells you. Gives general data on three types construction with list of applications for each, covering nearly 50 uses in four categories. Photos and specifications for all hose, hose assemblies, fittings. *Flexonics Corp.*

... for your copy, circle No. 264

Read how Roy M. Butcher Electric, San Jose, replaced gloom and glare with the balanced light you see here



Light up the gloom and soften the "hot spots"

Glare and shadows are often the underlying cause of inefficient production, accidents and low employee morale. Fortunately, it's a simple matter to correct this common lighting problem.

Modern industrial lighting fixtures have been designed to spread soft glare-free light upward, outward and downward. Butcher Electric achieved this comfortable seeing environment with "slotted" fixtures. Now there are no confusing shadows and contrasting glare . . . the entire 50' x 100' plant is bathed in *balanced* light. Productivity and employee morale have improved materially.

Northern California Electrical Bureau

"Certified Lighting" is a good production tool. Used properly, it can increase the quality and quantity of work. For detailed information on how you can benefit from "Certified Lighting," send for the free book offered below.

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KNOW-HOW NOTEBOOK Part 2

40 BEST HOSE-AND COUPLING MANUALS . . . continued

Slide selector picks the right hose for you

Handy 6 x 3-in. card has slide insert to show I.D. sizes from 3/16 to 2 in. To select the right rubber-covered hydraulic hose, you simply move the slide until proper size shows under the arrow. The spec number that appears will be that of the correct Wiretex hose for you, with rest of line showing hose O.D., min. burst, approximate weight per 100 ft., bend radius and other data. Selector card also points out construction features of the hose and lists several types of hose for a variety of uses. *Republic Rubber Div., Lee Rubber & Tire Corp.* . . . for your copy, circle No. 265

Resistoflex—how it survives severest tests

How Resistoflex hose and assemblies, made with Fluoroflex-T (Teflon compound) and stainless armour braid, survived 11 "severe service" tests is told in this research report. Advantages of the hose assemblies, which offer lighter, thinner "plumbing" with practically unlimited operating and shelf life, are explained. Tables give specifications and other technical data, while pictures and blueprints aid in pointing out unusual construction features and attachment methods. Also available is a concise manual listing the variety of flexible hose and assemblies products made by the firm. *Resistoflex Corp.* . . . for your copy, circle No. 266

Five spec sheets on Bruning couplers

Covers SM 250 and 370 couplers for high pressure hydraulic and pneumatic systems; SM-500 and SM-800 for rugged industrial and construction equipment uses; SF-500 and SF-800, similar to the SM series, but equipped with a mounting flange; SM-750, for relative low pressure-high capacity installations, of same capacity as 800 series but with parts not interchangeable; SP-500, an extra heavy duty coupler series for easy coupling and uncoupling at high pressures without using special leverage tools. Photos, drawings, basic performance and design data included on each sheet. *The Bruning Co.* . . . for your copy, circle No. 267

Gates selection table offers over 70 hoses

More than 70 types of industrial hoses are described in about as many pages of this double-indexed catalog. A sectional index has 11 different categories such as acid, air, material handling, steam, welding, hose—while the selection table indicates the hose number or type, usual applications, range of sizes and pressures, inside diameter range, psi, lengths available, and in which catalog section it can be found. Gives all necessary descriptive data, construction details and photos. *The Gates Rubber Co.* . . . for your copy, circle No. 268

Flexible rubber pipe, all-purpose and air hose

Three similar bulletins give you complete information on Condor flexible rubber pipe with advanced Hydro-Lok flange; Allflex all-purpose hose that is mandrel-made of horizontal braided construction; and the Super-Master BW air hose designed for high pressure and tough rugged service. Each lists design advantages for the product, specifications and applications. *Raybestos-Manhattan, Inc., Manhattan Rubber Div.* . . . for your copy, circle No. 269

Punch-Lok manual of clamps, tools, fittings

Deals with hose clamps, hose fittings, tools for application and Clamp-Master kits for maintenance and repair. Two types, and many sizes, of clamps are illustrated, with specifications. Similar data is furnished for the other products, plus a section on application that has step-by-step pictures. Two other small pamphlets also available from the firm. *Punch-Lok Co.* . . . for your copy, circle No. 270

Data sheet about indestructible pinch valve

How this pinch valve operates and is designed for lines handling abrasive and corrosive materials is outlined and illustrated. Points out advantages such as full flow, positive closure, wear-resistance, flexibility, ease of operation and installation, etc. Shows two valve styles—flanged and enlarged end—with specifications for each. *New York Belting & Packing Co.* . . . for your copy, circle No. 271

Facts on six kinds of Goodrich hose products

Selection of spec sheets on special types of industrial hose to suit particular requirements. Describes hose construction; lists specifications, fittings, recommended uses and other helpful data. Section 3100 on hose couplings and fittings includes clamps, menders, nipples, flanges, hose joints and hose ends. (Circle No. 272.) 3460 deals with air hose Type 50, Highflex, Commander, all-purpose and Type 88, with photos showing construction of each. (Circle No. 273.) 4600 on water suction hose includes Morecon, a new hose that springs back to shape when run over, plus four other types. (Circle No. 274.) 4785 discusses industrial vacuum hose in three classes according to light or heavy duty needs. (Circle No. 275.) 4800 treats water hose of several kinds for high pressure, wetting down dangerous dust, paper and pulp mills, furnace doors, etc. (Circle No. 276.) 3535, about anhydrous ammonia hose, gives data on two types, and couplings for each. (Circle No. 277.) *B. F. Goodrich Co., Industrial Products Div.*

for copies of all six manuals, circle No. 278

Selector chart covers over 180 elements

Over 180 elements shown on the agent selector chart featured in this Weatherhead catalog that incorporates complete information on bulk industrial hose, permanently attached hose assemblies, swaged hose assemblies and ends, hose and swivel adapters, assembly and installation data. Other charts for hose specification and hose end identification. Specifications cover 24 industrial hoses with facts on I.D. and O.D., maximum working pressure, proof-test and minimum burst pressure, inner and outer tube materials, reinforcement, temperature range and types of hose ends. *The Weatherhead Co.*

for your copy, circle No. 279

Five types of hose and how each is manufactured

You'll learn all about how hose is manufactured from start to finish in this information manual that divides industrial hose into five general classes, according to the character of the reinforcing material and the manufacturing method. It covers vertical braided, horizontal braided, machine-built wrapped fabric, hand-built wrapped fabric and woven jacket classes, dealing also with special types within each category. Supplementing the clearly worded text are pictures of various steps in the process. *Goodyear Tire & Rubber Co.*

for your copy, circle No. 280

Guide to Flex-O-Tube hose, assemblies, fittings

Contains 24 pages of specifications, sketches, ordering data and other facts about nine industrial hose types and a variety of assembly components for them. Covers factory crimped hose assemblies, bulk hose, reusable hose end fittings and assemblies. Recommended uses, construction details and easily-followed assembly instructions are included for most products, plus a page of data about adapter unions and tube connectors. *Flex-O-Tube Div., Flexonics Corp.*

for your copy, circle No. 281

Manuals tell about air, water and steam hose

Two similar four-page bulletins and an eight-pager present specifications, construction details, uses and fittings for several grades of hose in three categories. They cover eight brands of air hose for corresponding light, medium or heavy duty needs; steam hose in six grades for various pressures and uses, six kinds of water hose and six of water suction hose. *Boston Woven Hose & Rubber Co.*

for your copy, circle No. 282

Flexineering—the application of flexible tubing

Deals with scientifically applying proper flexible tubing to your problems, describes various kinds of Penflex hose, flanges, pipes, tubing and other products. Contains three pages of engineering data on tubing and couplings with specifications and sketches. *Pennsylvania Flexible Metallic Tubing Co.*

for your copy, circle No. 283

Facts on three grades of multi-service hose

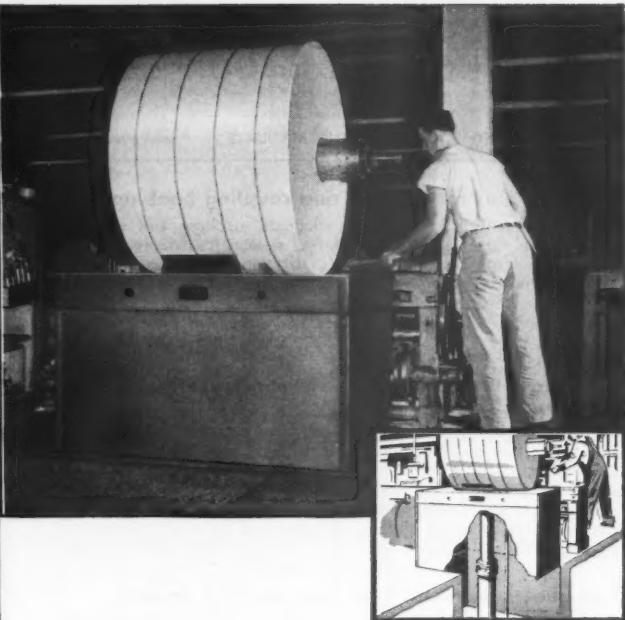
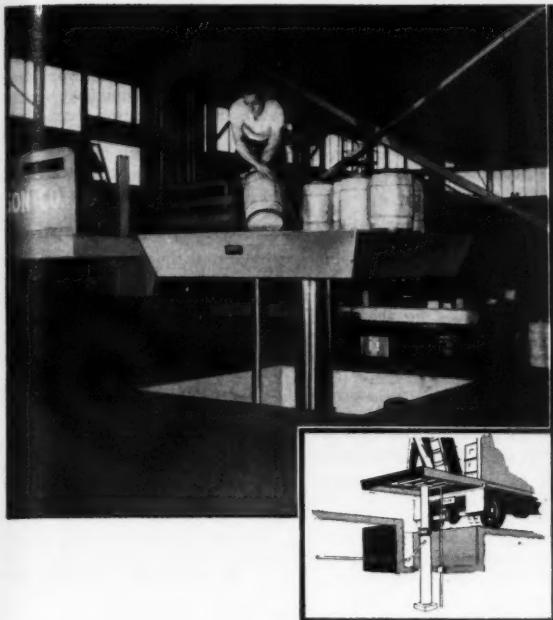
Bulletin of details on hose to be used for low pressure spray service, oil, air, gasoline, propane, water, welding and similar uses. Gives specifications, construction details for Monarch, Servall and Conservo grades of all-service hose. *Hewitt-Robins, Inc.*

for your copy, circle No. 284

Spec sheet on heavy duty Thor air hose

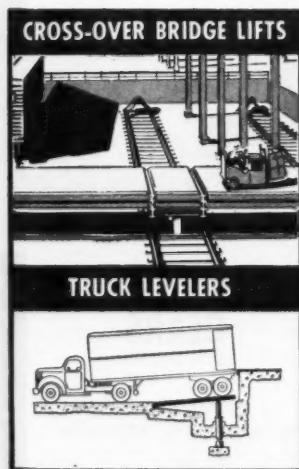
Gives data on mandrel-built heavy duty hose with neoprene inner tube, high tensile rayon cord braided body, and its applications for tough jobs. Includes specifications, application photos and prices. *Thor Power Tool Co.*

for your copy, circle No. 285



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KNOW-HOW NOTEBOOK Part 2

40 BEST HOSE AND COUPLING MANUALS . . . continued

Planning aids for air hose and coupling hook-ups

Data that will help you plan adequate air hose and coupling hook-ups is given in these catalog sheets that include chart showing loss of air pressure due to friction, check list to assure correct pressure, air hose recommendations, table of conversion factors, specifications and illustrations of hose, hose clamps and Quick-Change couplings. *Chicago Pneumatic Tool Co.* . . . for your copy, circle No. 286

Eight basic swivel joints and when to use them

Describes eight basic styles of swivel joints that provide 360 deg. rotation in combinations of one, two or three planes simultaneously; that handle pressures from 28 in. vacuum to 15,000 psi and temperatures from -70 deg. to 500 deg. F. The illustrated handbook gives tips for use of swivel joints in comparison with rubber hose and flexible metal tubing, a formula for calculating pressure drop, detailed dimensional data and list of the company's representatives. *Chiksan Co.* . . . for your copy, circle No. 287

Fact sheets on metal hose and electrical conduit

Liquid tight Flex-Seal flexible electrical conduit—with or without bonding strip—fully described in four-page folder. Presents facts about typical industry uses—textile mills, breweries, chemical plants etc.—deterioration resistance, ease of installation. Also available is brief data sheet on two types—fully interlocked and square-locked metal—hose and tubing. *Columbia Cable & Electric Corp., Metal Hose Div.* . . . for your copy, circle No. 288

Hose for Freon 12 and high pressure service

Three-part literature offering describes hose and Hozelok fittings for Freon 12 service, rubber covered two-wire braid hose and no-skive type Hozelok fittings for high pressure service. Specifications, illustrations and charts in two bulletins about these products. Instruction card for hanging on the wall shows the two simple steps in assembling fitting to the hose, with cutaway view to point out how the fitting grips the hose. *Parker Appliance Co.* . . . for your copy, circle No. 289

Data on pressure hose, reusable couplings, adapters

Lists cotton-covered single wire braid hose, rubber-covered single and double wire braid hose, and rayon braid hose—all with complete range of attachable couplings to make up any hose you need for the job. Gives complete data on pressure hose and couplings to make up low, medium and high pressure flexible lines; facts on wide range of adapters, and instructions for installation. *The Imperial Brass Mfg. Co.* . . . for your copy, circle No. 290

Handy reference guide for Flexaust products

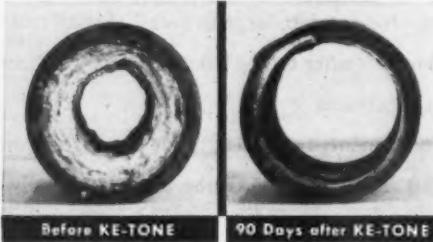
Tabbed for easy reference to hose, accessories and Portovent ducts, this eight-page manual gives prices and complete data on products for moving air, dust, fumes and materials via pressure, suction and gravity. Drawings show 12 typical industrial uses; how to cut, bend and shape the hose, and how to cut and couple the retractable duct. Explains specific advantages and applications for each. *The Flexaust Co.* . . . for your copy, circle No. 291

Socketless fittings, hose for quick assembly

Hose lines that can be assembled in minutes are covered in this 4-page folder with application photos, cutaway drawings, installation tips, etc. Gives complete ordering information for the hose, fittings and three Socketless kits that provide a complete, low-cost hose line inventory. *Aeroquip Corp.* . . . for your copy, circle No. 292

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removes scale, inhibits corrosion



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KE-TONE is a new and unconventional method for solving water-caused scale and corrosion problems. Developed from recent research in chelate and surface chemistry, it works by surface adsorption to fracture, suspend and dissolve scale. Only a few parts per million are needed to activate large volumes of water.

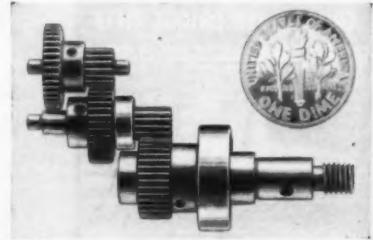
KE-TONE is highly efficient, extremely economical and performance-proved in the treatment of large or small volumes of water used in cooling towers, evaporators, boilers, heat exchangers and other industrial or commercial systems.

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... for more details, circle No. 45

All about Teflon hose and reusable fittings

Describes industrial Teflon hose with "Super-Gem" detachable reusable fittings for use where unusual exposure to wide temperature ranges and injurious chemical action are encountered. Two-page chart gives dimensions, other pertinent data for hose, fittings (male pipe and J. I. C. swivel), adapters and assemblies. Step-by-step assembly and disassembly instructions, lists of chemicals and solvents for which the hose is suited, and major manufacturing uses are included. *Aeroquip Corp.*

... for your copy, circle No. 293

20-page manual on Titeflex Quick-Seal couplings

A number of picture case histories help tell story of these couplings and their applications in the steel, railroad, machine shop, chemical, and other industries. Includes specifications, details and uses for both straight-through and check-valve couplings. Accessories, pressure data and a sample procedure for ordering are included. *Titeflex, Inc.*

... for your copy, circle No. 294

Goodyear handbook lists hose for every purpose

Applications, features, fittings and construction for over a dozen special types of hose—air, acid, steam, automotive, fire, spray, etc.—are described in this catalog's 28 pages. Several categories within the major types are included, a cutaway picture of each hose gives all the facts on construction details, and a chart gives technical data for steam hose. *Goodyear Tire & Rubber Co.*

... for your copy, circle No. 295

12-page guidebook to hydraulic hose assemblies

Features correct hose installation tips, two hydraulic hose selection charts and six-step sketch series on how to couple high pressure hydraulic hose with Gates reusable couplings. Specifications, ordering data, cutaway drawings and other pertinent information given for several hose types, couplings and adapter unions. *The Gates Rubber Co.*

... for your copy, circle No. 296

Hose for welding and fire equipment

Spec sheets on Quaker's regular welding hose, the Teline flame-resistant welding hose, and several kinds of industrial fire hose contain data on construction type, performance, tube, reinforcement and cover materials. Specification are given for all, and the manual about fire hose also illustrates and describes hose couplings of several types. *Quaker Rubber Div., H. K. Porter Co.*

... for your copy, circle No. 297

IT'S NOT TOO LATE to get your copies of the latest and best manuals on **floors, floor maintenance, lighting, and plastic pipe**. See the June issue of **Western Industry**.

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HELPFUL LITERATURE

for the West's plant
operating executives

FOR YOUR FREE COPIES, circle appropriate key numbers on postcard, page 85

84 pages on the surface treatment of metals

Rust prevention, mechanical and chemical cleaning, phosphating and other aspects of the field of metal surface treatment are discussed in a new 84-page booklet. Latest developments on the subject are described, various treatment processes diagrammed or pictured, and a complete listing of the firm's products for surface treatment included. *E. F. Houghton & Co.*

... for your copy, circle No. 151

48-page fact book on pipe and tubing

Pipe and tubing products ranging from $1/8$ to 40-in. O. D., are catalogued in this 48-page product manual that details the patented Contour Trentweld process. Products for high pressure applications, shaped and formed tubing, sizes for pulp mill stock lines and exhaust stakes, and a wide variety of other industrial uses are listed. A glossary; 17 tables on hardness, conversion, size, etc.; a section on titanium tubing; fitting guide; bending data, and installation tips are included. *Trent Tube Co.*

... for your copy, circle No. 152

Facts on many types of industrial wheels

Industrial wheels—standard aluminum, balloon-cushioned, pressed steel, micarts and the R & K Loadmaster with du Pont Neoprene tires—are outlined in this catalog. It gives details of design and construction for the wheels, as well as specifications and uses of various types of bearings, seals and rubber compounds. *R & K Industrial Products Co.*

... for your copy, circle No. 153

LP-Gas conversions for your industrial trucks

Step-by-step instructions for converting industrial trucks to LP-Gas operation are published in this easy-to-follow installation folder. Data includes complete installation diagram, explanation of the Beam system of LP-Gas carburetion, and illustrated installation directions for each component part. *Beam Products Mfg. Co.*

... for your copy, circle No. 154

Armco manual covers 5,000 steel building sizes

Five types of Armco steel buildings—ranging from shed roof to gable roof for your specific needs—are detailed in this manual with information on more than 5,000 building sizes. Among many subjects the book covers are simplified panel construction, wide choice of interior treatment and finish, and ease of erection. Numerous tables, drawings and installation photos supplement the text. *Armco Drainage & Metal Products, Inc.*

... for your copy, circle No. 155

How to design and build with plywood

Detailed charts on plywood's properties and design data, including one of grade-trademarks with brief description of each grade and available sizes, highlight the booklet, "Design with Fir Plywood". An informational aid, it gives tables on nail bearing properties, working stresses, insulation, etc., and lists in capsule form major advantages and recommended fabrications procedures. *Douglas Fir Plywood Association.*

... for your copy, circle No. 156

Fabrication data on extruded acrylic sheets

Complete information on handling, machining, forming, cementing and annealing of low-cost Cadco extruded acrylic sheets is given in this 12-page bulletin. It contains a table of properties and several charts to show light transmittance, including comparison with that of cast sheet. *Cadillac Plastic & Chemical Co.*

... for your copy, circle No. 157

Ordering data for grading and industrial lights

Fatline and slimline fixtures for industrial, office and lumber grading lighting equipment are listed in this selection guide that has complete information for ordering. Sketches show several series, with dimensions, and a detailed drawing tells you how to install the Western Pine grading light. Prices are included. *Electric Lighting Sales, Inc.*

... for your copy, circle No. 158

How, when, why to use spray booths

This 36-page catalog describes and pictures spray booths of every type, size and application, and features an illustrated selector guide with a capsule description of each booth, how it works and its primary uses. Each illustration is keyed to the page number and section in succeeding pages where fuller details are given. Water wash, paint arrestor, dry baffle, ceramic and traveling booths are covered, along with seven points to consider in selecting the proper type for your needs. *The DeVilbiss Co.*

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WESTERN INDUSTRY — July 1957

Shipper's guide has map and mileage charts

A large U. S. highway map with mileage charts, an explanation of special services offered by P. I. E., and other information of interest to the shipping public are included in this 1957 shipper's guide and direct service point list. The new edition, which is in a self-contained file folder, shows the more than 2,500 points served by the express company in the Western two-thirds of the country. *Pacific Intermountain Express.*

... for your copy, circle No. 160

Selection guide for variable speed belt drives

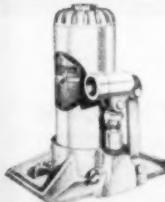
This eight-page catalog gives complete selection data about drives designed for use with Dayton's Q, R and W cross-section variable speed cog belts; five drive tables with speed ratios, driven speed ranges and center distances for motors up through 20 hp., and details on the firm's easy-slide motor base permitting quick release of belt tension. *The Dayton Rubber Co.*

... for your copy, circle No. 161

Facts on infrared ovens for industrial heating

Where and how you can use radiant energy equipment is the subject of this brochure with 20 picture case histories of infrared ovens employed for baking, drying, preheating and countless other industrial heating applications. Photos, sketches and descriptive paragraphs cover portable models, fixed-type production ovens and horizontal types in many sizes. *Fostoria Pressed Steel Corp.*

... for your copy, circle No. 162

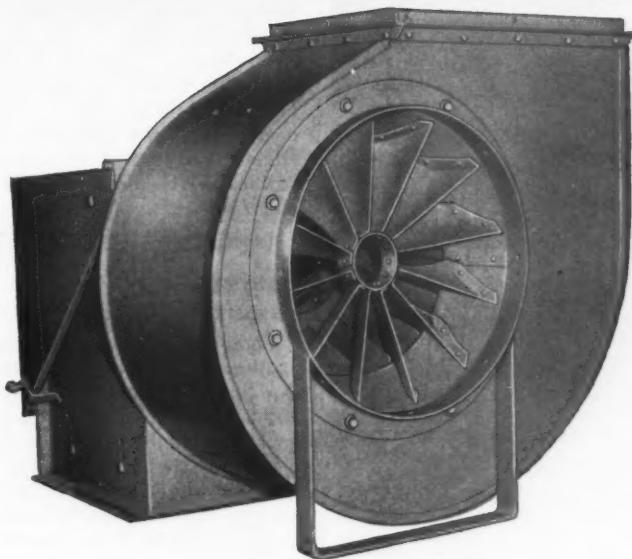


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WESTERN INDUSTRY — July 1957

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Besides this versatile, high-performance fan, we stock rugged "Buffalo" Industrial Exhausters, Vaneaxial Fans, Electric Blowers-Exhausters, the large-system Type BL Ventilating Fan and the full line of "Buffalo" Package Propeller Fans. Your nearby "Buffalo" Engineering Representative will give you full details, recommendations on the best fan plus follow-up on fast delivery.



BUFFALO FORGE COMPANY

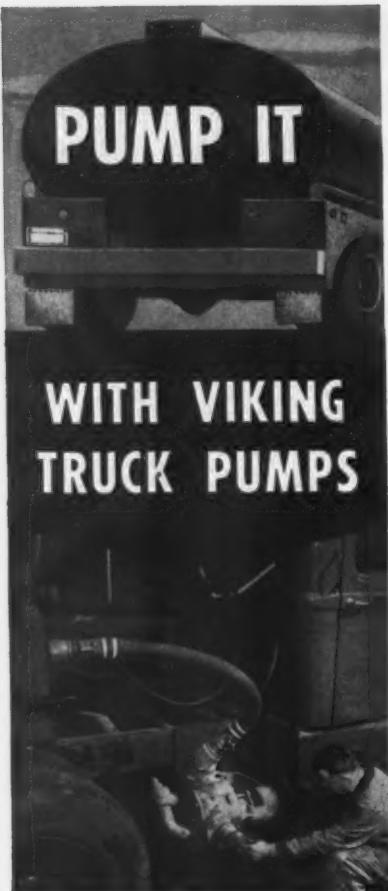
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Plant Engineers File

...for more details, circle No. 49

**Handbook gives facts on
teflon for insulation**

A 20-page engineering handbook on Teflon (tetrafluoroethylene) recently released covers usage of this material in practical applications as a cushioning and insulating material for supporting clamps. Containing all the latest information on the product, it covers its thermal, chemical, electrical and aging properties, as well as modern methods in handling it. A comprehensive tabulated chart, furnished by Dupont Co., covers 28 tests of the various physical properties. *TA Manufacturing Co.*

... for your copy, circle No. 163

**Data on poppet-type
air control valves**

Complete dimension, installation, application and operation data on a new line of pilot-operated poppet-type air control valves is given in a 16-page booklet. Available for 2-, 3- and 4-way operation, the No-pak-matic valves have master (air) single or double solenoid pilot control. Pipe sizes range from $\frac{1}{4}$ through $\frac{3}{4}$ in., pressure is up to 150 psig., and temperature to 250 deg. F. *Galland-Henning Nopak Div.*

... for your copy, circle No. 164

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... for more details, circle No. 50

**Finger tip facts on line
of worm gear drives**

This 16-page bulletin provides useful summary information on the Cleveland complete standard line of speed reducers, worm gear sets and special units. Horsepower ratings range from the fractional to over 450 hp., worm-gear center distances from 3 in. to 21.837 in., in the many models included. One page is devoted to photos of specialized reducers for custom-design requirements, and the text of the book is supplemented by pictures and a comparative size table. *The Cleveland Worm & Gear Co.*

... for your copy, circle No. 165

**Poster-size bulletin
on compacting presses**

This eight-page bulletin folds out to 17 x 22 in. size for illustration of the 22 design features of a Kux hydraulic automatic high speed compacting press with push-button control and ball-bearing leader-pin tooling alignment. Another labeled photo gives technical facts for the push-button control, more completely explained in the text. *Bulletin 4100F-M. Kux Machine Co.*

... for your copy, circle No. 166

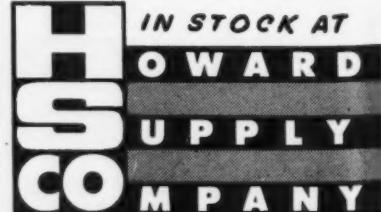
**Facts on packaged
air conditioning units**

Packaged air conditioners in six sizes and from 3 to 20 ton capacities are described and illustrated in this 20-page catalog with physical and engineering data for each unit and all major components. Capacity curves, fan performance tables, recommendations for V-belt drive selection, a pressure drop table and ordering data are included. *American Blower Div., American-Standard.*

... for your copy, circle No. 167



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JACKS**



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... for more details, circle No. 51

WESTERN INDUSTRY — July 1957

Seven new manuals on electromagnetic controls

These complete manuals cover various phases of electromagnetic control designated Catalogs 57-S1 through S-6. Catalog 57-S1 gives complete data on automatic transfer switches (mechanically or magnetically held) that are designed to transfer a load from a normal or preferred source to an emergency source upon failure or reduction in voltage of the normal source. Catalog S2 covers the remote control switches used for convenient and accessible control of power and lighting circuits from any number of control stations. An extensive line of magnetically held contactors is described in Catalog S3, which tells about unlimited combinations, including multi-pole, special contact arrangements and materials, and other engineered-to-fit features. Catalog S4 gives data on relays that are magnetically or mechanically held and may be obtained in unlimited pole combinations. This catalog also covers special purpose relays. The firm's a-c and d-c solenoids, in a wide variety, are treated in Catalog S5, that includes facts on the firm's facilities for engineering and making solenoids to your specifications. In Catalog S6, electric plant controls are discussed, with information on complete systems, paralleling changeover and alternating panels, load demand controls, battery chargers and adapter units. To obtain your copies, write on your company letterhead, specifying catalogs you want, to Robert C. May, Director of Sales Promotion, Automatic Switch Co., Dept. WI, 50-56 Hanover Road, Florham Park, N. J.

Idea book on how to handle concrete products

Efficient techniques for handling block, pipe and pre-cast products are shown in this pocket-sized book packed with practical ideas for the concrete products manufacturer. How industrial trucks and attachments can be used in this industry is illustrated with application pictures of processes such as aggregate handling, form handling and concrete pouring. *Hyster Co.*

... for your copy, circle No. 168

40-page manual on gas regulators

Here's a book about pressure regulators for industrial compressed gases that deals with various types of cylinder, manifold and pipeline control devices, both single- and two-stage, with flow and pressure graphs of performance data. Specialized equipment—laboratory and metering regulators and gas proportioners—as well as related equipment—station valves, adapters, hose connections, and pressure gages—are illustrated and discussed. *Air Reduction Pacific Co.*

... for your copy, circle No. 169

Data on powder metallurgy and its products

This two-part literature offering consists of a catalog about self-lubricating oil impregnated bronze and iron bearings and a brochure, "The Evolution of Powdered Metal." The former lists standard sizes of bearings available for immediate shipment and gives technical data for selection and installation. The brochure is a general report on the average products of powdered metal that includes description of the firm's complete facilities. *Asco Sintering Corp.*

... for your copy, circle No. 170

NOW!
a new and complete stock
of Perforated Metals
in Ziegler Steel's Los Angeles and San Francisco-Oakland Warehouses

Ornametal* and Industrial Designs

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made by
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Metals for 82 Years

Perforations from .020 diameter x .006 thick to 3½" diameter x 1½" thick steel plate.

Perforated metal may be processed by heat treating, sand blasting, parkerizing, painting or enameling and electro-plating of all types.

SPECIAL ORDERS Coils or cut lengths, any metal or material that can be perforated • Industrial Screens — Welded or Formed

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... for more details, circle No. 52 on Reader Service Postcard



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1855 1957

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... for more details, circle No. 53

Ready reference book of material handling items

Concise, factual information on 51 material handling items—casters, wheels, hoists, chains, slings, lifts, hand trucks, etc.—is presented in this 36 page, 4 x 9-in. booklet. Descriptions, capacities and specifications of each item are so compiled, arranged and indexed that you can readily find the correct equipment for your particular needs. *Stanley E. Morris Co.*

... for your copy, circle No. 171

32-page dictionary of simplified steel terms

More than 180 fairly detailed definitions often used in the purchase, manufacture, treating, machining and finishing of steel are contained in the booklet, "Simplified Steel Terms and Engineering Data." Terms defined range from annealing and austempering to spheroidizing, stress relieving and yield strength. Over 30 pictures, curves and tables cover subjects such as standard grain sizes . . . method of determining hardenability . . . izod toughness vs. tensile strength, etc. *LaSalle Steel Co.*

... for your copy, circle No. 173

36 pages on ABC's of fire protection

Three types of fire protection systems — fixed-temperature, rate-of-temperature-rise and alarm and control — and different extinguishing methods used with them are described and illustrated in this 36-page bulletin. In a discussion of nature and advantages of fire protection systems, the booklet explains insurance savings and other economic benefits provided by such protection. The company's complete range of components and systems is detailed, including sprinklers, water fog, air and chemical foam, etc. *"Automatic" Sprinkler Corp. of America.*

... for your copy, circle No. 172

Data on production mill for metal-working

Specifications and design advantages of a low-priced semi-automatic production mill are presented in this four-page data folder. There are detailed pictures of the mill and attachments, and of five other metal working machines made by the firm. *Rotex Punch Co., Inc.*

... for your copy, circle No. 174

Ask Standard

how



mile-long conveyor system speeds TV production line

IN this TV plant, Standard engineers designed and installed more than 2800 ft. of Standard slat and wire-mesh belt conveyors as part of a mile-long conveyor system.

If you need gravity or power conveyors — in roller, belt, slat, chain, wheel, push-bar and sectional types — you can be sure Standard's recommendations will be unbiased because Standard can engineer conveyor systems to meet any problem. STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minn.

... for more details, circle No. 54 on Reader Service Postcard

Contact the Standard engineer listed in your classified phone book. Or, write for free catalog. Address Dept. H-7.



Sales and Service in Principal Cities.

WESTERN INDUSTRY — July 1957

Detailed information on hydraulic cylinders

Improvements in design and additional mountings for Vickers "Compact" hydraulic cylinders are covered in Bulletin No. 57-68. It features a gate-fold section with cylinder dimensions and blue prints of several types of mountings and rod ends. The bulletin provides detailed information on construction and features of the company's 2,000-psi. cylinders, including the new trunnion-mounted types. Complete tables of sizes and dimensions and useful engineering data on application, mounting, piston areas and speeds, etc., are also included. *Vickers Incorporated.*

... for your copy, circle No. 175

Facts on LP-Gas—its operation and equipment

Advantages, characteristics and operation of LP-Gas; functions of various kinds of LP-Gas carburetion equipment, and details of various conversion systems in use are featured in this 20-page booklet. Every phase of LP-Gas carburetion equipment, including fuel-tank and necessary fittings, is explained: products made by the company are illustrated. *American Liquid Gas Corp.*

... for your copy, circle No. 176

Picture presentation of all-purpose trailers

A line of trailers for use with light trucks is shown in this brochure that also tells about the firm's design and fabrication service for specialized trailer units. Four models of the standard type are pictured, with other photos showing them put to use for varied industrial uses. *Locomotion Engineering.*

... for your copy, circle No. 177



REVERSIBLE RATCHES

**H
S
CO
M P A N Y**
IN STOCK AT
HOWARD
SUPPLY
COMPANY

... for more details, circle No. 55

WESTERN INDUSTRY — July 1957

Storage Tricks you can do only with

Sturdi-Bilt Adjustable STORAGE RACKS

The racks are the same in each picture . . . only their spacing has been varied to meet the specific need! No special engineering . . . no custom designs. One Sturdi-Bilt Adjustable Storage Rack meets all storage requirements. Instantly adjustable for all sizes, shapes and weights of goods . . . and easily interchangeable for pallets, skids, dies or bulk. They're never obsolete — Sturdi-Bilt Racks can be changed as your needs change.



Open stock handled like shelf storage
— pallets stored above.



No space loss — cross traffic aisle with storage "on top."



Storage openings varied to fit the merchandise.

**THE SECRET IS EXCLUSIVE
Float Wedge
Construction**
U.S. Patents No. 2760630
Other patents pending

**NO TOOLS, BOLTS, NUTS,
WELDING OR SPECIAL LABOR**



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Simply insert
Sturdi-Bilt
Wedge Lock . . .

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. . . into the
slots (anywhere
on 3" centers)
in the factory
pre-fabricated
upright frame

(3)
. . . and lock to
the horizontal
safety support
bars.

Write for folder No. WI-77

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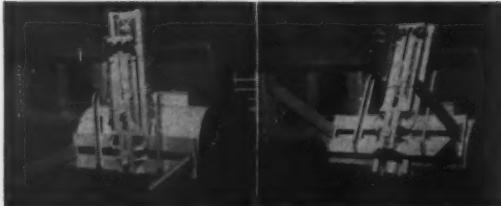
... for more details, circle No. 56 on Reader Service Postcard

NEW EQUIPMENT

for Western plant operation, production, and maintenance

USE RIP-OUT POSTCARD, page 85, for more information on products described.

SIMPLIFIED MATERIAL HANDLING ... with Dempster-Dumpster container system for handling plant waste



Pick-up and haul positions, above, and the dumping operation, left, add up to an easy three-step material handling process.

The driver never leaves the cab in the three-part operation of pick-up, hauling and dumping shown here. It's the Dumpster-Dumpster system, using the GRD 304-F-2 model truck-mounted Dumpster with fork-like arms that permits Dempster detachable containers to be picked up and set down automatically. This means complete handling of a container—including the driver's return to location—accomplished with new speed, ease and simplicity. The height of the Dumpster goes from 9½ ft. at pick-up to only 9 ft. while hauling, extending to about 23 ft. for the dumping process, with fork clearance up to 11 ft. Used with containers that range in size up to 21 cu. yd. and in capacity over 36,000-lb. payloads, the system permits collection of materials at one point for dumping into gondola rail cars, bins, etc. The Dumpster also teams with compaction-type bodies for handling bulk refuse in congested areas at large plants, etc. *Dempster Brothers, Inc.*

... for more details, circle No. 178 on postcard

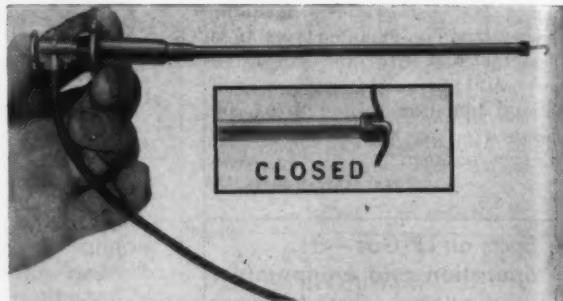
INJECT-O-MIST OILER ... protects and lubricates pneumatic tools

Oil is broken into a microscopic mist and injected into pneumatic tools with this automatic oiler used on staplers, wrenches, riveters, sealers, drills and other tools with air cylinders that work on intermittent principle. The Inject-O-Mist attaches directly to the tool, adjusts to proper lubrication of tool and lubricates it in any position with or against gravity. It has controlled tamper-proof adjustment, eliminates oil in air hose and lines, and prevents moisture damage through a protective oil film it puts on all working parts of the tool. Weight—5 oz.; dimensions— $3\frac{1}{4} \times 1\frac{5}{8} \times 1\frac{1}{8}$ in.; case construction—Tenite. *Carlson Products, Inc.*

... for more details, circle No. 179 on postcard

PLASTIC TEST PROBE

... grips wires, leaves both hands free

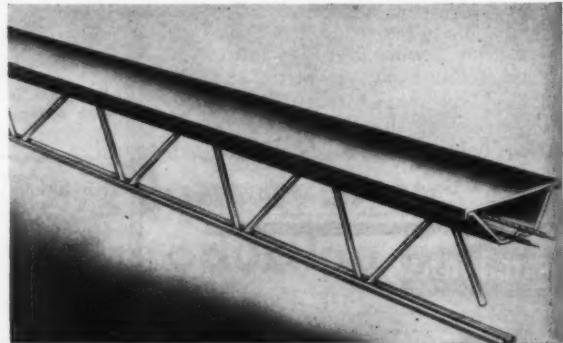


An interior spring mechanism in the Griprobe (priced at less than a dollar) is the secret of this precision tool engineered to grip-hold terminals, tube sockets, lugs and wires, freeing hands of the operator to handle other tools or test equipment. To work it, you simply press your thumb to open the hook-shaped metal probe; when you remove your thumb, the probe closes in a self-lock grip. Said to speed up trouble-shooting procedures from 10 to 30% it is designed for use by radio and TV servicemen, lab technicians, experimenters and operators engaged in manufacture or testing of missiles, rockets, electronic equipment, etc. Made of durable vinyl plastic, it has five ft. of highly quality test lead wire. *Standard Electronics, Inc.*

... for more details, circle No. 180 on postcard

STEEL JOISTS

... double as floor supports, electrical ducts

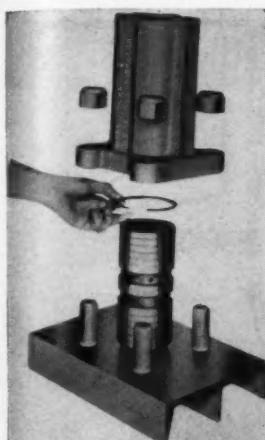


Essentially a shortspan open-web steel joist, this new type has the conventional top chord replaced by a hollow duct that serves both as a structural member and as an underfloor electrical distribution duct through which electrical telephone and signal wires can be carried and brought up through the floor at any desired point. Low cost advantage of the joist makes it feasible to install underfloor electrification systems in relatively low-budget buildings. Made in same sizes as standard shortspan joists, these can carry equivalent loads, be placed side-by-side with the others, and requires the same concrete and reinforcement for the slab over the joist. *Ceco Steel Products Corp.*

... for more details, circle No. 181 on postcard

AIR-OPERATED VIBRATOR

... has aluminum cylinder for light weight



Consisting of only two parts, besides the optional base, this air-operated vibrator for moving all types of bulk materials is substantially lighter than most since it uses an aluminum cylinder. Called the KO it is available with a 2-in. diameter piston, making its weight 60 lb., and in 4-in. diameter, weighing but 79 lb., in comparison with 185 lb. for conventional vibrators. The steel piston is housed in a cast aluminum or semi-steel cylinder block and the assembly is bolted

either directly to the bin or to a base plate welded on the bin. It is permanently lubricated with molybdenum disulfide, dry film lubricant, for lifetime protection, has been successfully used to move gravel, grain, chemicals, etc., through bins, chutes, hoppers, and tubes. *The Cleveland Vibrator Co.*

... for more details, circle No. 182 on postcard

SIGHTMASTER FUSE

... for locating that blown fuse faster, easier



Screwed into fuse boxes like any other fuse, the Sightmaster's special features come into action when a short circuit occurs. First it blows out to eliminate fire possibility, then the bright neon light atop each fuse flashes to indicate which circuit is broken. When the blow-out cause has been corrected, you simply turn the Sightmaster to the next setting and the current is restored. Each fuse is good for six blow-outs and the safety switch on each is guaranteed shockproof so re-setting can't cause electrical shock. Available in 15, 20, and 30 amps., for 110 or 220-v. systems, the new fuses sell for around \$7.00 for a set of six, equal to 36 ordinary fuses. *Ward International, Inc.*

... for more details, circle No. 183 on postcard

CORROSION INHIBITOR

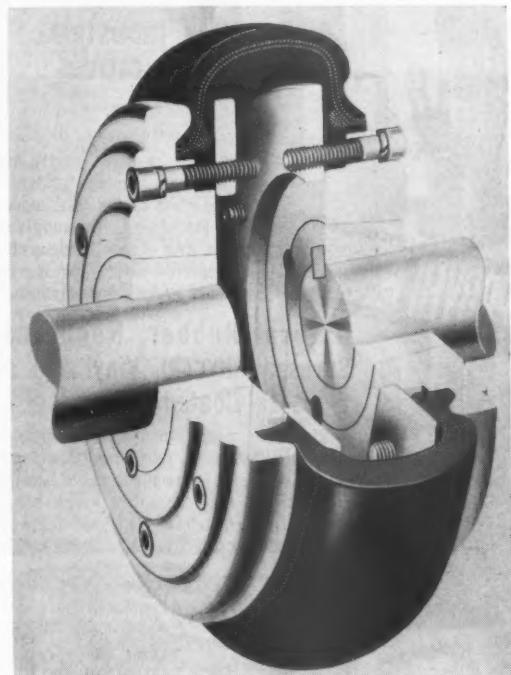
... for cooling tower water in wide pH range

The control of corrosion in cooling tower systems is the purpose of Nalco 360, a chromate type material to which other synergistic inhibitors have been added. Effective over a wide range of pH conditions, the inhibitor is produced in ball briquettes of 3-in. diameter that weigh about one pound. To apply the chemical, (1) cooling water passes through a by-pass feeder to dissolve the briquette and carry the solution back into the cooling water line, or (2) the briquettes may be dissolved in a suspended wire basket. Applicable to a variety of cooling waters. Nalco 360 should not be used to treat potable waters nor where contamination of such may occur. *National Aluminate Corp.*

... for more details, circle No. 184 on postcard

FLEXIBLE CUSHION COUPLING

... features rubber tire, can handle mis-alignments and end-float



A rubber tire at the heart of this Para-flex coupling cushions shock loads and diminishes torsional vibration, protecting both driver and the driven machine.

A wholly new conception in flexible couplings—Dodge Manufacturing Corp.'s Para-flex—is now available to solve some of your most vexing power transmission problems. Para-flex has the ability to correct angular mis-alignment, parallel mis-alignment and end-float, and in any combination. The flexible member also cushions shock loads and diminishes torsional vibration, thus protecting both the driver and the driven machine.

Heart of the Para-flex coupling is a tire with synthetic tension members bonded together in rubber. The four-way flexing body of Para-flex outperforms the most complex coupling mechanisms, yet operates with the simplicity and dependability of a modern tire.

In addition to its many operational advantages, Para-flex has other highly desirable features of installation and maintenance never before available in a flexible coupling. Para-flex will take angular mis-alignment up to four degrees, parallel mis-alignment up to $1/8$ in. and end float up to $5/16$ in—contingent upon the size of the coupling and the duration of the conditions—or it will take all of these simultaneously. In a recent endurance test in a Western steel mill of 16 couplings, Para-flex was one of two couplings still functioning.

Para-flex couplings will be stocked by Dodge distributors in popular transmission sizes. They are available from factory stock in capacities up to 600 hp. at 900 rpm. *Dodge Mfg. Corp.*

... for more details, circle No. 205 on postcard

MATCHED to your needs



PROVED more wear per pair



Natural Rubber, Neoprene, Sureseal (HYCAR), Vinyl and all types of Coated . . .

Surety makes many regular and special types of gloves for most requirements and can supply accurate information as to wearing qualities and resistance that will help you select the right gloves for your jobs and control glove costs. Send for a Surety catalog.

THE



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CARROLLTON, OHIO

Western Sales Representative:
The Macintosh Co., 3030 Bridgeway, Sausalito, Calif.
... for more details, circle No. 57 on Reader Service Postcard

Windeler Wood Tanks

**SOLVE
ACID
Problems**

**And Work
With Caustics**



Windeler tanks handle acid solutions economically. Pictured here are three Windeler Built Tanks in a South Dakota uranium mill handling various solutions. At the left is an ion exchange feed (highly acid, pH 1.7) holding tank, large tank at right is a slime tailing neutralization tank and the small one in the center is a lime slurry tank.

Wood tanks also handle acetic acid of 40-80%, sulphuric of 5%, or hydrochloric of 5%. When planning new construction or expansion, plan on wood tanks for economy.

**G eorge
W indeler
C ompany**
LIMITED

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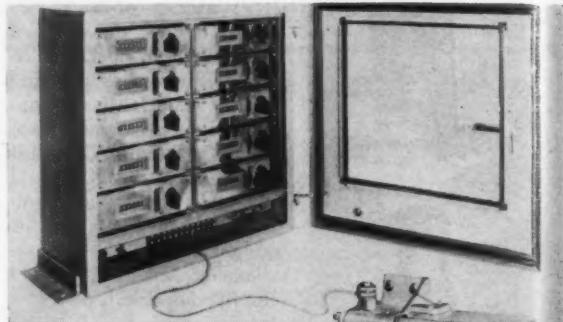
Ask for folder W-3 or
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"Our 72nd Year."

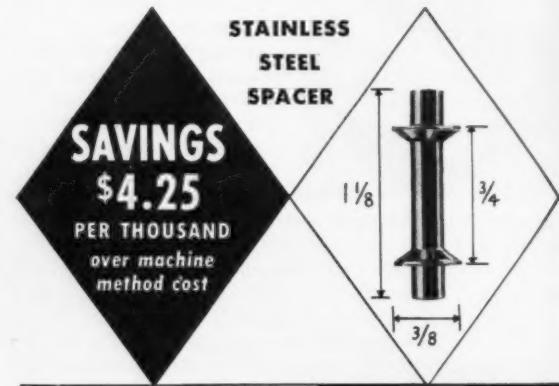
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... counts up to 200 units per min.



Accurate, tamper-proof counters combined with a sealed, moisture-proof "brain" in a remote installation cabinet make up the Hytab incentive counting system with various chutes for specific products. Hytab counts up to 200 units per min., adjusts by the turning of a knob to set maximum counting rate to match worker's maximum ability. As the product passes through a gate arrangement on the chute, this pressure actuates the hermetically sealed switch that is held in close position by a



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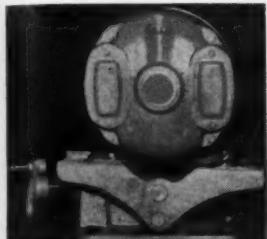
WESTERN INDUSTRY — July 1957

small magnet. Cabinets—one for every 10 Hytabs—fit easily any place you want at any distance, have totals instantly available. The system has a self-contained rectifier that reduces 110 a-c. to 24 d-c., affording low voltage to safeguard workers against shock and eliminate insulation problems. *Magnuson Engineers, Inc.*

... for more details, circle No. 185 on postcard

TLTING MOTOR BASE

... makes belt changing easier



This compact base compensates for belt tension when speed changes are made while the machine is running, makes belt changing easier, and requires only minimum space for adjustment. Featuring one size base— $5\frac{1}{2} \times 7\frac{1}{2}$ in.—for all fractional horsepower changes, its tilting movement calls for little space. Correct belt tension and alignment are constantly maintained by a hand-wheel screw adjustment that changes the angle of tilt. *Lovejoy Flexible Coupling Co.*

... for more details, circle No. 186 on postcard

PLASTIC MODUBOX

... safe handling on production line

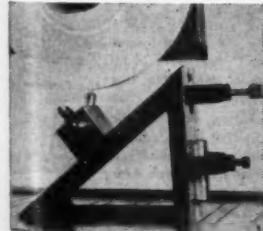


Protection for precision-machined, electronic and instrument assemblies during material handling on the production line, in stock, and in finished goods inventories can be provided by a new product—the Modubox. Made of tough plastic, it is light in weight, resists acids and oils, will not warp or stain, and cleans easily. It stacks easily on its lugs or self-supporting partitions that adjust to fit any size component, and its rolled edges give a safe, sure grip. The product comes in different lengths, widths and depths in standard models or can be custom-made for your special applications. Available in six colors for easy departmental separation. *Hollywood Plastic Arts.*

... for more details, circle No. 187 on postcard

WHEEL AND PUNCH DRESSER

... V-machined to take up to $\frac{1}{4}$ -in. diameter



You can do without "V" blocks and other holding fixtures if you have this combination punch and wheel dresser with the punch grinder built-in as an integral part of the device. Shop-tested and now widely in use, it comes with or without a diamond nib. Shown here as the face of a wheel is being trued, the tool is $5\frac{1}{4}$ in. high, $1\frac{1}{8}$ in. wide, with a base $1\frac{1}{8} \times 4\frac{3}{8}$. It has adjustments up to 6 in., or 7 in. by removing clamps, and a knurled screw that provides positive clamping action. *Havelock Machine Co., Inc.*

... for more details, circle No. 188 on postcard

The sooner you put Cadillac Quik-Vac to work — the sooner you'll start cutting cleaning costs

Rocket power

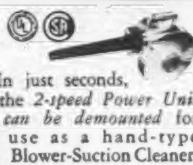
for WET and DRY CLEANUP. It gets the damaging, deep-down dust and dirt that lodge in machinery... picks up filings, chips, dirt, litter, and liquids.

VACUUMS
BLOWS
AIR-SWEEPS
SPRAYS



Cadillac Quik-Vac Model 14 has a 2-speed motor... an exclusive feature. High speed (super-suction) for the toughest vacuuming and blowing jobs... reduced power for cleaning small parts in stock bins, delicate wiring, etc.

Model 14 has a 3-in-1 Swivel Hose-coupler. For vacuuming, it connects hose to dirt container or power unit intake... for blowing, to the power unit outlet. Another Cadillac Quik-Vac exclusive that saves time, trouble and money.



In just seconds, the 2-speed Power Unit can be demounted for use as a hand-type Blower-Suction Cleaner.

THE Rugged MODEL 14

CLEMENTS

Cadillac®
QUIK-VAC



... has a new teammate... the versatile MODEL 21. This Cadillac Quik-Vac meets the requirements of maintenance women as well as maintenance men. It has super-power, extra large capacity, and its wide floor nozzle has a "floating brush" that adjusts itself automatically to any type of floor covering. It's as sturdy as an oak, yet moves about with ease of a ballerina.

WE'LL BE GLAD TO SEND FULL INFORMATION ABOUT THESE CLEMENTS PRODUCTS

- Cadillac Quik-Vac Model 14
- Cadillac Quik-Vac Model 21
- 2-speed portable Blower-Suction cleaner and 3 other job-rated models
- Hot- and Cold-Air Blower
- Furnace Blowers
- Gas Blowtorch
- Huge assortment of attachments for handling scores of cleaning and production jobs

WRITE US FOR COMPLETE INFORMATION and name of our nearest supply dealer

*Patent applied for

write Industrial Vacuum Cleaner Division
CLEMENTS MFG. CO., 6832 S. Narragansett Ave., Chicago 38, Ill.

Specialists in the manufacture of vacuum cleaning equipment for home, business and industry

Several territories are open for sales representation by verified factory rep.

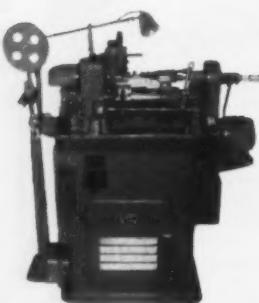
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LOW COST STEEL PANEL BUILDINGS

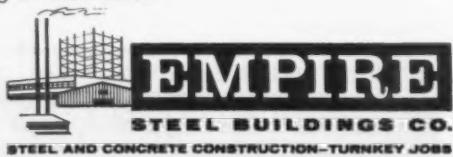


Save money with Empire steel buildings—One contract—all work guaranteed. 100% financing available also low-cost leasing. Buildings of any width, length or height. Quality at a price. Both rigid frame clear span and flat rise tapered girder designs; will support cranes and monorails.

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Also all types masonry, pre-cast tilt-up concrete, and aluminum buildings. Free estimate and rendering without obligation. Write or phone for catalog or information.

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STEEL AND CONCRETE CONSTRUCTION—TURNKEY JOBS
2137 Marianna Ave., Los Angeles 32, Calif.

... for more details, circle No. 62 on Reader Service Postcard
84

NEW TURBINE-TYPE MIXER

... mixes six times faster, homogenizes batch



Up to six times faster mixing that results in materials being actually homogenized is promised for the new Smith Turbine Type Mixer. Designed with a doughnut shaped mixing drum, its mixing area has no dead center—hence a "live mix" is produced. The drive mechanism is located in the doughnut's "hole," transmitting power to the blades through spur type reduction gears. There is high peripheral speed in the entire mixing area and the blades are positioned to braid the material at 9 ft. per sec., activating the mix material by a whipping action. Results are a much

IMP

*The Low Cost Answer to Increased Materials Handling Efficiency

*Industrial Mobile Phone



Complete Unit

\$360

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Designed for triple duty as base transmitter, mobile radiotelephone, and public address system, the IMP keeps vehicles in contact with each other as well as central dispatching . . . stops empty trips and needless backtracking . . . turns every trip into a payload haul!

Ruggedly built for industrial use, the IMP measures only 12 1/2" x 8 1/4" x 5 1/4". Installation is simple, tune-up not required, and maintenance costs low.

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ENGINEERING CORP.

2901 Middlefield Rd., Palo Alto, California
Canadian Office: 801 Dominion Bldg., Vancouver, B. C.

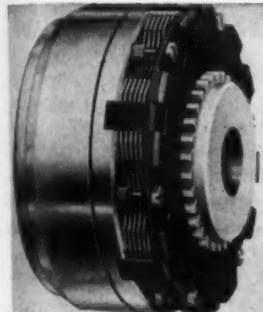
... for more details, circle No. 63 on Reader Service Postcard
WESTERN INDUSTRY — July 1957

faster, more thorough mix and when the mixer is used for concrete—a much stronger batch. Other design features of the device are low height, light weight, economy, bottom discharge, loading flexibility, easy installation and visual access so that batches can be easily examined. Recommended for the concrete, glass and refractory, chemical and fertilizer, and food processing industries. *T. L. Smith Co.*

... for more details, circle No. 189 on postcard

MAGNETIC CLUTCH

... fast operating speed, minimum drag



Patented design features on this new clutch for machine tools and other industrial applications include short axial and small radial dimensions, complete isolation of the magnetic assembly from integral mechanical parts, and compact precision assembly throughout. It is available in stationary field or brush types and for either wet or dry operations. Said to have unmatched operating speed both engaged and disengaged, its "decay time" and "residual drag" are reduced to the minimum by isolation of the magnetic units from clutch friction components. Easily adapted to modern machine tools, and with a wide range of bore sizes, the clutches provide complete torque control under all rated conditions, through push buttons, relays or limit switches, etc. *Fawick Airflex Div., Fawick Co.*

... for more details, circle No. 190 on postcard

"Eats" Corrosives Alive!

GOULDS
STAINLESS STEEL
Centrifugal
PUMPS

Handles the Corrosive Liquids used in the Chemical Industry and other fields . . . stands up to Acids and Alkalines for which iron or bronze Pumps are not suitable.

Entire fluid end is of Stainless Steel, mounted on a sturdy cast iron support. Built throughout for tough 24-hour service under the most exacting conditions. One of many Goulds special Pumps that will help solve your pumping problems.

PACIFIC COAST GOULDS DISTRIBUTORS:
Goulds Parts and Expert Service . . .
Consultants on any Pumping Problem

WOODIN & LITTLE • R. M. WADE & CO.
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1919 N.W. Thurman St., PORTLAND 9
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PUMP ENGINEERING CO.
2011 Santa Fe Ave. • LOS ANGELES 21

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WESTERN INDUSTRY — July 1957



BORROUGHS

shelf support bracket

makes

**BORROUGHS
STEEL SHELVING**

**a great
"stacker-upper"
of savings!**

BORROUGHS MANUFACTURING CO.

A Subsidiary of The American Metal Products Company of Detroit

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William A. Gore Co., 1834 Adeline St., Oakland 7, Calif.
1016 1st Ave. S., Seattle 4, Wash.

Hart-Cobb-Carley Co., 2439 S. Yates Ave., Los Angeles 22, Calif.

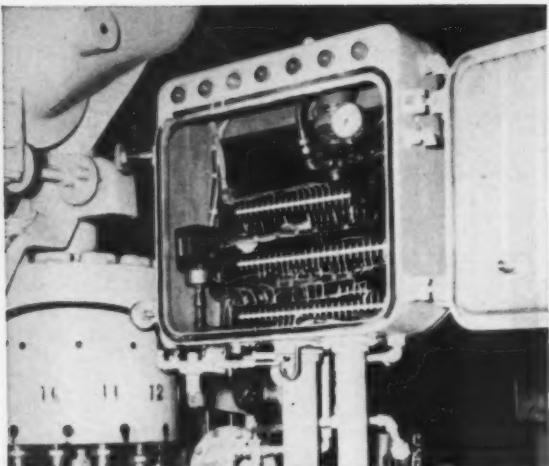
Healy & Company, 2302 Tulare St., Fresno, Calif.

Parron-Hall Corp., 208 "C" St., San Diego 1, Calif.

Paul W. Roeder Co., 2617 "J" St., Sacramento, Calif.

Sparkman-Barker Co., 550 Santa Fe Drive, Denver 4, Colo.

... for more details, circle No. 65 on Reader Service Postcard



NEW WIRE FOR "HOT SPOTS"

Anaconda's new Densheath* 900 all-purpose wire—made with a new, high heat-resistant PVC insulation—gives plants an extra margin of protection wherever wiring is exposed to chemicals, oil or moisture *at high ambient temperatures*; and affords greater current-carrying capacity! Densheath 900 is approved as Type TW and can be used in National Electrical Code applications. In other applications, it can be used to its maximum rating of 90°C copper temperature. Available in sizes 14 Awg to 2000 Mcm. Write for descriptive Bulletin DM-5612. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 87948

ANACONDA®

*Reg. U. S. Pat. Off.

... for more details, circle No. 66 on Reader Service Postcard

SERVING INDUSTRY FOR 50 YEARS

The More Particular You Are In
Selecting Gears, The More Likely
You Are To Select JOHNSON



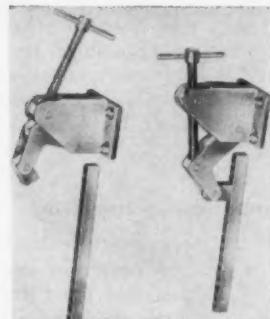
JOHNSON GEAR
AND MANUFACTURING CO.
8th & PARKER STREETS
BERKELEY 10, CALIFORNIA

... for more details, circle No. 67 on Reader Service Postcard

88

HEAVY DUTY CLAMP

... lightning fast, clamps from 0 to 3 in.



Only 4-5/16 in long, this versatile clamp has a rugged buttress screw and special nut that apply instant pressure, so that you merely back the screw off one turn, lift handle and pull back for instant retraction. Its compact design eliminates nuisance of large protruding handles, yet it can clamp varying thicknesses without adjustment. Of channel type construction, the Lightning

Lock clamp has body and arms of high tensile steel, with screw and nut of treated alloy steel built to withstand pressure to 2,000 lb. The rolled buttress thread provides maximum strength and one-second operation. *General Alliance Corp.* ... for more details, circle No. 191 on postcard

LIQUID DETERGENT

... for steam-cleaning steel, brass, magnesium

Designed for use both in solution lifting steam guns and self-generating steam cleaning equipment. Oakite LSD can handle a variety of steam cleaning operations. Said to provide effective soil removal at concentrations of 1 to 2 oz. to each gal. of water as delivered by the gun, its solutions have a pH of 12 in the operating range. Used as recommended, is claimed to have no effect on painted surfaces and no offensive fumes.—*Oakite Products, Inc.*

... for more details, circle No. 192 on postcard

ON THE SPOT HEAT to your exacting requirements!

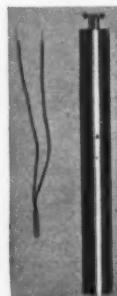


TRENT STRIP HEATERS

for Ovens, Dryers, Kettles, Process Equipment

- Flat Metallic Tube Casing
- No Grooves—No Heat Distortion
- Ceramic Block Terminal Blocks
- Sealed End Construction

Available in a complete range of types and sizes, wattage requirements, and voltage conditions—for maximum safe surface temperatures of 750°F. and 1000°F!



TRENT CARTRIDGE HEATERS

for Dies, Molds, Platens, Sealers, Defrosting

- Brass or Steel Sheath Construction
- Silver Soldered End
- Opposite Terminals
- Moisture and Wax Resistant
- Nickel Chromium Heater Coil Sealed in Ceramic Insulation
- Sealed End Construction
- Brass Angle, Pigtail, Rod, or Stud Type Terminals

Standard sizes from $\frac{3}{8}$ " to $1\frac{1}{8}$ " diameter, and $1\frac{1}{8}$ " to 22" in length, are supplied in a range of wattage requirements for 110 and 220 volt operation.

Discuss your spot heating requirements with a Trent representative.

Trent Representatives In
Principal Cities
Coast to Coast

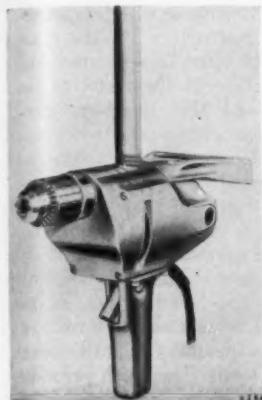
TRENT INC.
Electrically Heated Industrial Equipment
242 LEVERINGTON AVE., PHILA. 27, PA.
In Canada Supreme Power Supplies, Limited, Toronto 11

... for more details, circle No. 68 on Reader Service Postcard

WESTERN INDUSTRY — July 1957

1/2-IN. SHORTY DRILL

... only 12 1/2 in. long, weighs 9 1/4 lb.



If you're a drilling equipment user faced with close-quarter work, you'll be glad to hear about this Model 612 "Shorty" drill, that delivers 1/2 hp. and 8 ft. lb. of torque at the chuck. Said to be the most powerful of its type, it weighs just over 9 lb., measures only 12 1/4 in. in length. It has a 6 amp., 115-v. a-c/d-c motor, with spindle speed 600 rpm. Ball bearings have sealed-in lubrication, the helical cut gears and pinion are of heat treated alloy steel, and the handle is spade type, located in line with the 1/2-in. Jacobs industrial chuck for easier drilling, truer, straighter holes, the company says. Other features include cyclonic-type fan cooling, trigger switch with locking button and built-in chuck key holder. *Milwaukee Electric Tool Corp.*

... for more details, circle No. 193 on postcard

COATING FOR GLASS FIBRE

... renovates old panels, reduces light in new



Corrucone, developed for resurfacing old glass fiber reinforced plastic building panels, is basically an acrylic lacquer that comes in five colors as well as clear material. At the top of the picture you see a section of old panel with glass fibres showing; just below, the same panel after cleaning. Next, the panel with a clear coat of Corrucone, and then, the panel takes on brightness as a coat of green coating is applied. The bottom section is like new after a second coat of green Corrucone. Used also on new pieces for reduction of light transmission, the coating has a drying time of 20 min. to a tack-free state. Its coverage is approximately 300 sq. ft. when sprayed, the method recommended to eliminate streaking. *Corrulex Div., L-O-F Glass Fibers Co.*

... for more details, circle No. 194 on postcard

HYDRAULIC LIFT TABLE

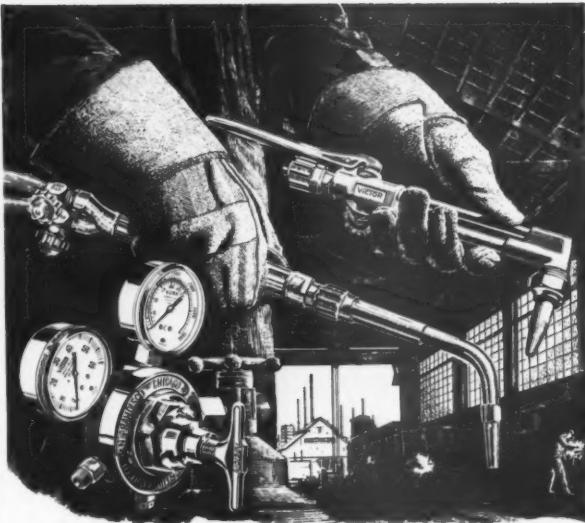
... rotates, lifts over 500 lb. to 47 in.



"Easy-Up" is the name of this hydraulic lift table for handling dies, tooling, parts, etc., that has a swivel top, rotating casters, rubber ball-bearing wheels. With a thick cold-rolled plate top and tip-proof base, both 22 in. square, its low position is at 30 in., with a 17-in. travel to 47 in. Operating hydraulically by a quick hand pump and simple foot

release, it can lift weights in excess of 500 lb. Sells for about \$100 delivered. *John Charles Co.*

... for more details, circle No. 195 on postcard



the most flexible tools in the metal working industry

VICTOR COMBINATION WELDING
AND CUTTING UNITS

FOR EASE OF HANDLING DIFFERENT JOBS . . . Welding, brazing, hardfacing, heating, heat treating, descaling and paint burning. Cutting, trimming, deseaming and weld scarfing.

**WITH A WIDE VARIETY OF NOZZLES, TIPS
AND CUTTING ATTACHMENTS**, with quick-change, hand-tight, time tested sealing ring connections.

RELIABLE FIELD-PROVED REGULATOR DESIGN for safe, dependable pressure and flow control.

See for yourself how easy it is to handle your work when you use Victor equipment. Ask your Victor dealer for literature or a demonstration.



Mfrs. of welding & cutting equipment;
hardfacing rods, blasting nozzles;
cobalt & tungsten castings;
straightline and
shape cutting machines.

VICTOR EQUIPMENT COMPANY

844 Folsom St., San Francisco 7 • 3821 Santa Fe Avenue, Los Angeles 58

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PENNZOIL CUTTING FLUIDS

assure the finest lubrication,
provide real coolant efficiency

NO OTHER FLUIDS DO A BETTER
HEAT DISSIPATING JOB . . .

HIGH FILM STRENGTH CUSHIONS
WORK AND FORMING TOOLS . . .

PENNZOIL QUALITY MEANS LONG
TOOL LIFE . . . AND PROFITS



THE PENNZOIL COMPANY

942 So. Hope

Los Angeles 15

... for more details, circle No. 70 on Reader Service Postcard

Off'n On
in less than
2 minutes!

another
Plus Value

... found in

NOPAK-MATIC valves



LESS
MAINTENANCE
FASTER
MAINTENANCE



Eliminate costly maintenance and downtime. Entirely new design assures longer, trouble-free operation . . . fast maintenance. Every model is subplate mounted and piping does not have to be disturbed. Loosen four screws and replace a complete unit in minutes. Even "in-the-line" maintenance is shortened with replaceable seats and interchangeable pilot heads.

NOPAK-MATIC valves meet all J.I.C. Standards.

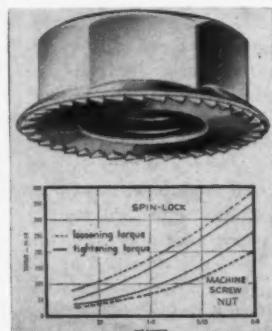
CATALOG 105 describes in detail all of the new and important advantages of Nopak-matic 2-, 3-, and 4-Way valves. Your catalog will be forwarded promptly, upon request.

NOPAK **VALVES and**
CYLINDERS

GALLAND-HENNING NOPAK DIVISION 2749 S. 31st St., Milwaukee 46, Wis.
... for more details, circle No. 71 on Reader Service Postcard

SPIN-LOCK NUTS

... speedy, economical, combine two functions



Designed with a ratchet-like structure on the base that bites into the bearing surface of the metal to be joined this one-piece fastener resists any tendency to loosen, so that torque required to loosen it is actually greater than the tightening torque. Combining the function of nut and lock washer in one piece, it can be assembled in a fraction of the time required for the conventional two parts, needs no adjustment or positioning and is hardened to carry heavy loads. The teeth provide excellent electrical equipment contact, are not deformed in use so the nut may be reused. They are available in sizes ranging from number 8 to 12 in. *Russell, Burdsall & Ward Bolt and Nut Co.*

... for more details, circle No. 196 on postcard

GALVINOLEUM COATING

... ends paint-peeling headaches

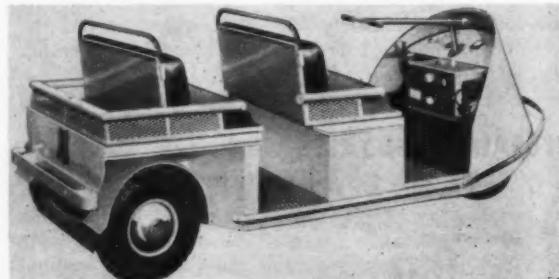


No etching or weathering is needed if you use specially formulated Galvinoleum coating for your gutters, downspouts, roofing, heating and ventilating ducts, etc. For application right over new unpainted galvanized aluminum or terne plate surfaces, it comes in red, gray, green, and metallic colors. Any high-quality oil base house paint may be used over Galvinoleum to match desired trim color. *Rust-Oleum Corp.*

... for more details, circle No. 197 on postcard

ELECTRIC CAR

... for your plant and/or on the golf course



When this new electric car isn't put to use around your factory as a personnel carrier or passenger vehicle, it can pile up mileage around the golf course, equipped with a four-bag rack. You can get speeds as required up to 16 mph.—higher speeds optional with a larger motor. If you prefer, you can have your Forsom with a steering wheel instead of a steering tiller. Every 110-v. outlet is a service station for the car, since it has an optional spring-reel type charger unit that permits re-charging anywhere, any time, when the car is idle for a moment. The Forsom comes with Lub-O-Matic drive. *Lahey Spring & Tire Corp.*

... for more details, circle No. 198 on postcard

TUGSTER TRACTOR

... low cost, low upkeep, no gear-shifting

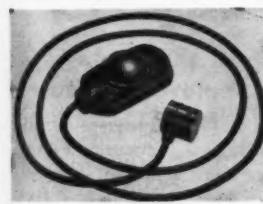


Powered by a Wisconsin air-cooled Model AEN engine with 8 to 1 hp. at 3,000 rpm., this Tugster industrial tractor has fully automatic drive, 750-lb. drawbar pull, simplified driving controls. Designed for towing of interplant trailer trains and for gathering warehouse orders, it has 360-deg. steering that permits operation in a 48-in. 90-deg. intersecting aisle. Comes with either 1 to 1 or 3 to 1 steering ratios, speeds range up to 10 mph., and dimensions are 6 1/4 in. long by 37 3/4 in. wide. Features include throttle ring mounted in steering wheel; brake control bar below the wheel; electric starting system; excellent "inching" characteristics, engine hour meter and comfortable padded operator support. *Hyster Co.*

... for more details, circle No. 199 on postcard

RUGGED FOOT SWITCH

... neoprene-encased, for 7 amp. at 110 v.



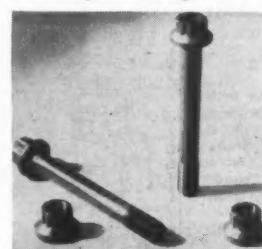
A light push with your foot turns this switch on, and when pressure is released the controlled equipment is switched off, with no waste of power or time. Rated for 110 v., 7-amp. a-c duty, the neoprene-encased Smith-Switch is dust proof,

resistant to chemicals and oil, uses a rugged bakelite interior unit with 1/4-in. tungsten points and phosphor-bronze springs. You just plug it into a standard outlet, then plug the equipment to be controlled into the switch cord socket. Can be used to control small shop machinery, door and gate openers, material handling equipment and maintenance machines. *Chicago Telephone of Calif., Inc.*

... for more details, circle No. 200 on postcard

HEAT-DEFYING BOLTS

... high strength at high temperature



Actually as strong at 900 deg. as most high-strength fasteners are at room temperature, these SPS steel superbolts, recently introduced, represent a unique wedding of exceptional strength and temperature resistance. Called Hi Tm 9 fasteners, they have, at 900 deg. F. a minimum tensile strength of 170,000 psi—50% more than the strength of stainless and alloy steel fasteners currently used at this temperature. Immediate use for the bolts is seen in aircraft engines, power plant steam and gas turbines, some nuclear and chemical processes where both high temperature and high pressure exists. Made of Vasco-Jet 1000, a 5% chromium hot work die steel, the fasteners are 12-point external wrenching type tension bolts used for airframe fastening, with diameter size from 1/4 to 1 1/2 in. The fasteners also feature a new Hi R thread designed with larger-than-normal root radius, diffused nickel-cadmium plating and a special Flexlo locknut. *Standard Pressed Steel Co.* ... for more details, circle No. 201 on postcard

At loose ends about where to buy a special Brand?

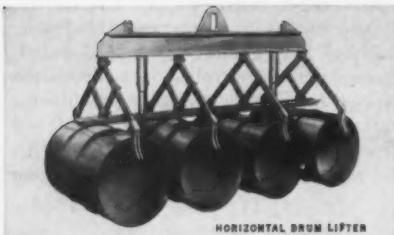
**Pin it down in the
YELLOW PAGES!**

Just open the Yellow Pages to your product heading. Like *filters*, for instance. There you'll find Brand Names listed alphabetically—each with the local distributors who sell them. That's all there is to it... takes just seconds.

You'll find it fast in the...



... for more details, circle No. 72 on Reader Service Postcard



HANDLE DRUMS FASTER



ONE... OR HALF-DOZEN
at a time using...
Safety Grabs

Figure the savings when you can pick up three to six drums at a time with a Downs Horizontal Drum Lifter or with a Downs Vertical Drum Grab... both grabs are fully automatic, which means more efficient use of manpower. If your handling operation can be met with a grab that will lift only one drum at a time, Downs has a complete line of models to do the job.

**Make your work
SAFER and EASIER — SAVE MONEY**
Write for complete details on Drum Handling
Ask for Bulletin 201-2



DOWNS CRANE & HOIST CO. MECHANICAL ENGINEERS

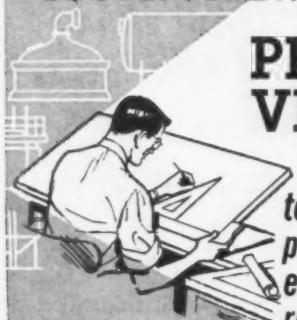
540 W. VERNON AVENUE
LOS ANGELES 37, CALIF.

Electric Cranes • Hand Cranes • Jib Cranes • Sheaves • Sheave Blocks
Plate Grips • Plate Hooks • Crane Trolley Hoists • Crane Wheels • Crane
End Truck Units • Jib Crane Fittings • Automatic Mechanical Load Brake
Crane Hook Blocks

... for more details, circle No. 73 on Reader Service Postcard

WHEN SPECS CALL FOR
CUSTOM FABRICATION OF...

PRESSURE VESSELS



to meet specialized
plant and
equipment
requirements

You'll save time,
trouble and money by
contacting Puget Sound—
a versatile, "on the spot"
custom source with over 56
years of experience in the
fabrication of steel plate
and alloys up to 1". Send
prints for prompt quotation
on your next job.



Request
Brochure No. B-57



**PUGET SOUND
FABRICATORS, INC.**

Craftsmen in Metals

3670 E. Marginal Way • Seattle 4, Wash.

Craftsmen in steel plate and alloys up to 1"

... for more details, circle No. 74 on Reader Service Postcard
92

ROLL-ON ALUMINUM ROOFING ... just roll it on and nail it down



... sums up the installation method for this corrugated aluminum building material. Made of embossed corrugated aluminum in .019-in. thickness, it comes in easy-to-handle 50-ft. rolls in three widths—18, 30, and 54 in. One man can easily carry a roll and two men can cover a roof quickly and simply. You use regular metal shears to cut across corrugations, and for special lengths, roofer's knife. Highly reflective to heat, it keeps buildings up to 15 deg. cooler. *Kaiser Aluminum & Chemical Sales, Inc.*

... for more details, circle No. 202 on postcard

VERSATILE VISE

... for metal or plastic, has removable head



Unlike other vises of its kind, this versatile Panavise has a head that is easily removable so that any fixture or plate with a 4 5/8-in. shaft can be inserted in the base, thus serving to replace costly jigs and fixtures for light assembly operations. Currently in use by electronic and other assemblers at aircraft and industrial firms, it is equally suited for metal or plastic, can be used

for sanding, soldering, buffing, etc. It swings to 360 deg. on any tangent to a half sphere, locks in any position. Made of die-cast zinc and aluminum, it stands 6 1/2 in. high, is 5 1/2 in. wide with both jaw width and opening 2 1/2 in. Sells for about \$15.00. *Pacific Durable Products.*

... for more details, circle No. 203 on postcard

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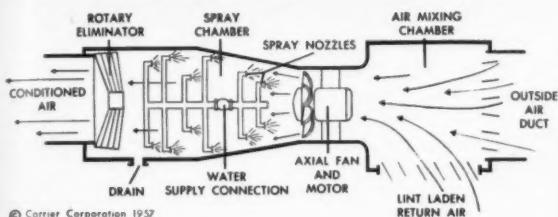
the many advantages of

**SORBONCAST
CAST IRON
DAYTON FOUNDRY**

Hollydale, Calif. • NEvada 6-1251

... for more details, circle No. 75 on Reader Service Postcard
WESTERN INDUSTRY — July 1957

AIR CONDITIONING SYSTEM ... self-cleaning, takes 1/3 usual space



© Carrier Corporation 1957

Called the first major advance in industrial plant air conditioning in nearly 50 years, this Rotaspray Weather-maker may well obsolete current apparatus. It requires only one-third the usual space, provides more accurate humidity control, and is self-cleaning to virtually eliminate maintenance problems. In operation, air drawn into Rotaspray through a cubically shaped mixing chamber is sent through a "hurricane" of atomized water particles created by a spray-nozzle "tree." A new "spin-dry" eliminator removes water droplets, lint and other foreign matter as air leaves spray chamber to enter duct system for distribution. *Carrier Corp.*

... for more details, circle No. 204 on postcard

YOU CAN HAVE CONFIDENCE in the new products described in **Western Industry's** pages. Why? Because great care is taken to see that each manufacturer is ready, willing and able not only to sell his product in the West but also to back it up with adequate service!



Satisfaction Guaranteed Or Money Back TRIAL OFFER

TRU-O-SEAL fittings are guaranteed to seal pipe thread connections permanently against all oils, practically all known chemicals and gases; to seal under high pressures or vacuum; to withstand -200° to plus 500° F.; to eliminate "overtightening" damage and pipe dope. Available in $\frac{1}{8}$ " to $2\frac{1}{2}$ " pipe thread sizes.

\$10.00 Trial Offer No. 1: eight $\frac{1}{2}$ ", ten $\frac{3}{4}$ ", eight $\frac{5}{8}$ ", ten $\frac{1}{2}$ " pipe thread **TRU-O-SEAL** fittings.

\$10.00 Trial Offer No. 2: eight $\frac{1}{2}$ ", ten $\frac{3}{4}$ ", four 1" pipe thread **TRU-O-SEAL** fittings. Send order to

TRU-O-SEAL DIVISION
Flick Reedy Corporation
2043 N. Hawthorne
Melrose Park, Ill.

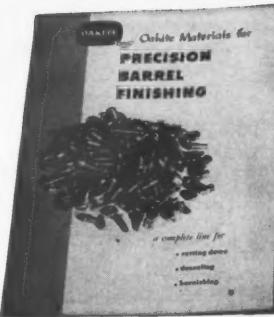
"Miller Fluid Power" is also a Div. of Flick-Reedy Corp.

... for more details, circle No. 76 on Reader Service Postcard

WESTERN INDUSTRY — July 1957

**PUT your
products
in the barrel**

**TAKE your
profits out**



There's great money-saving in using barrels to finish parts by the hundred in place of conventional methods that finish one part at a time.

One Oakite customer changed to barrel methods to deburr 14-inch curved stainless steel strips. The cost for deburring 20,000 strips was reduced from \$3,000.00 to \$125.00.

FREE For your copy of "Precision Barrel Finishing", write Oakite Products, Inc., 1001 E. First St., Los Angeles 12, or 681 Market St., San Francisco 5, Calif.



Export Division
Cable Address: Oakite

Technical Service Representatives in
Principal Cities of U.S. and Canada

... for more details, circle No. 77 on Reader Service Postcard



**Proven Durability plus
Precision and Economy...
Clean Bright Finish**

"Stanho" Taper Pins are made from selected steel bars, microscopically free from any defects. Milled or centerless ground precision types. Also available made from Stainless Steel, Monel, Brass, Aluminum or other metals to your specifications. Prompt shipments . . . in bulk or conveniently packaged.

Write for
catalog
and prices

STANDARD
HORSE NAIL CORP.
Since 1872
NEW BRIGHTON, PA.

Western Factory Sales Representative

GRETHER & GRETHER, P. O. Box 47, Stockton, California

... for more details, circle No. 78 on Reader Service Postcard

ODD SHAPES

ELPAR crane stores an extra-long load of pipe . . . can carry anything to which hook, chain or cable can be attached.



BULKY LOADS

Large equipment crated for protection is readily transferred to open freight car.



VERSATILITY

ELPAR crane with magnet loads correct amount of various loose materials into dump bucket.



DOUBLE DUTY

This ELPAR crane also has a platform that carries skid loads. Crane then stacks pieces.



MAINTENANCE MAN'S DREAM

ELPAR cranes have countless uses in plant maintenance, carrying motors, transformers, electric panels, machine tools, etc. They are ideal for positioning such equipment on repair jobs.



do all these jobs at
your plant with...

ELPAR
®

MOBILE CRANES

Only a few of the great many uses of ELPAR cranes are shown. For hardly any other material handling devices can match their versatility. ELPAR cranes are ideal on unfixed routes—carrying or stacking odd-shaped loads that cannot be readily handled on pallets or skids. They are speedy, maneuverable and work well in close quarters. Slew-ing booms permit reaching over intervening obstructions.

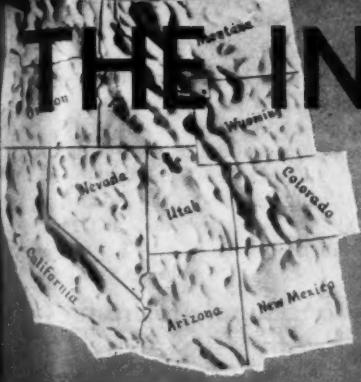
ELPAR mobile cranes are available in 3,000, 6,000 and 10,000-pound capacities. Electric or gas-electric power.

WRITE FOR FOLDER

ELWELL-PARKER ELECTRIC CO. WESTERN REPRESENTATIVES:
Los Angeles . . . J. W. LAFFERTY CO., 5422 E. Washington Blvd.
San Francisco IRA G. PERIN CO., 575 Howard St.
Seattle COLBY STEEL & MFG. INC., 3155 Elliott Ave.

...for more details, circle No. 79 on Reader Service Postcard
WESTERN INDUSTRY — July 1957

THE INDUSTRIAL WEST ON ITS WAY



plants • production • distribution • personnel

GUIDELINES

JULY 1957

- **"EAST IS EAST AND WEST IS WEST AND NEVER THE TWAIN SHALL MEET?"** Kipling's **Ballad of East and West** is wrong in the industrial sense. A **Western firm is moving East!** Yes, a firm born in the West has grown big enough to invade the East. This is **Sunbeam Lighting**, which has established an Eastern division . . . and is going to give the East a fine taste of Western know-how and product superiority.
- **STEPPED UP PRODUCTION AND EXPANSION MARKS THE INDUSTRIAL WEST.** PSP Engineering is tripling production in a move to a larger plant in Maywood, Calif. . . . Chemtrol doubles production in a new plant in Compton, Calif. . . . Linde, Modernair, Harcraft Brass and Old Colony Paint & Chemical are just a few of the firms that have added to production facilities.
- **THE WEST IS ESTABLISHING ITSELF AS A TEST AND RESEARCH CENTER.** The West's most advanced research and development center constructed to aid the design and development of tomorrow's defense and commercial products was opened by **Aerophysics Development Corp.** in Santa Barbara . . . **Northrop Aircraft** has built a "House of Test Magic" in Hawthorne, Calif., where freezing, burning, wetting, ultrasonic shock vibration, and other related conditions will be conducted on products.
- **WATCH THIS ONE!** . . . The city of South San Francisco is taking steps to establish a deep-water seaport. The significance to industry: Better shipping facilities . . . the availability of more land (some 80 acres) by realignment of the northern bulkhead line along the San Bruno canal.
- **ANOTHER "BIGGEST" IN THE WEST!** The **American Can Company** is chalking up a "biggest" with the expansion of its can-manufacturing plant at Vernon, Calif. **With 940,000 sq. ft., this plant will be the largest of its kind in the West, and one of the six largest can factories in the world!**
- **"INDUSTRY, WE LOVE YOU!"** When **Rohr Aircraft Corp.** opened a new \$500,000 assembly plant at Auburn, Wash., practically the entire population of the town (7,500) turned out for day-long plant tours. The local Chamber of Commerce promoted the opening of the new plant with main street banners, store posters and newspaper . . . all of Modesto, Calif., celebrated, too, when **Tri-Valley Packing Association** observed its Silverama in the newly completed warehouse there. **This kind of civic support just doesn't happen in the East!**

— Details on following pages —

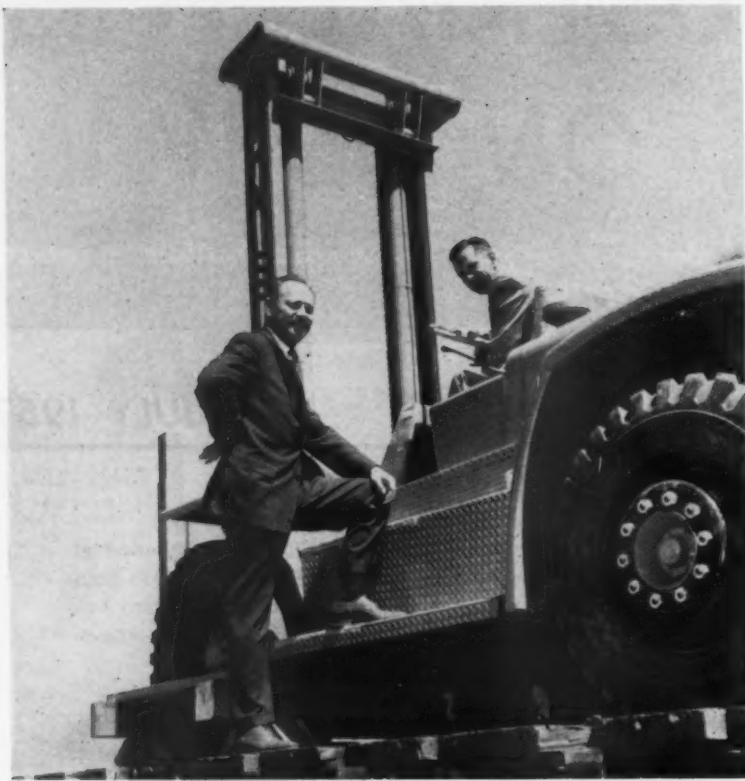
THE INDUSTRIAL WEST ON ITS WAY

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JOHN T. McCARLEY (left), manager of the new San Leandro manufacturing plant of Yale & Towne Co., lets Charles Cooper, district sales manager of Kaiser Steel Co., sit in the driver's seat of one of the two first Yale & Towne industrial lift trucks to come out of the new plant.

Yale & Towne Manufacturing Co. speeds \$3,000,000 expansion in West

LOS ANGELES—A \$3,000,000 expansion program is underway by the Yale & Towne Manufacturing Co. to supply materials handling equipment for the Western market.

The announcement was made by Clyde R. Dean, Jr., general sales manager of Yale Materials Handling division, at the opening of a new industrial truck factory sales and service branch at 5711 E. Olympic Blvd. in Los Angeles.

The expenditure is being made, he said, in anticipation of a 150% increase in the demand for Yale materials handling equipment in the West by the end of 1965.

The major portion of the expansion cost, Dean stated, is for the new Yale manufacturing plant at San Leandro, Calif., which recently turned out its first production line lift trucks.

In addition to lift truck manufacture, the general sales manager said, the new plant will serve as a major parts depot for the 11 Western states, and will also produce a line of bulk

materials handling equipment.

The new plant is the sole manufacturing site for the new Yale G-3 series of industrial trucks in capacities from 15,000 to 20,000 lb. which were shown for the first time in the West in conjunction with the Los Angeles branch opening.

Dean said the new Los Angeles branch, Yale & Towne's second major project in its Western expansion program, represents an investment of \$325,000 by Yale in order to bring the ultimate in service to industrial truck users in the Los Angeles area. The new branch serves Los Angeles, Orange, Riverside, San Bernardino, Inyo, Ventura, Santa Barbara and San Luis Obispo counties.

The final portion of the project, Dean said, came in a major overhaul in the company's Western distribution network.

In addition to the establishment of the Los Angeles branch, he said, representation in the West generally has been doubled in the past 10 months.

Four new franchise representative outlets have been created and two sub-branches added to the company's San Francisco operation, he said. In addition, he added, representation in established territories in the Northwest and Rocky Mountain states has been strengthened.

Howard Supply distributes Goodrich plastic pipe

LOS ANGELES—Howard Supply Co., 5125 Santa Fe Ave., has been appointed to the distributorship of B. F. Goodrich Koroseal plastic pipe.

BFG Koroseal polyvinyl pipe is now manufactured in sizes through 8 in. in schedules 5 to 120. Complete stocks of the pipe, fittings and valves will be carried at Howard Supply warehouses in Los Angeles, Oakland, Bakersfield, Santa Maria and Ventura.

Stauffer proves out large phosphate ore body

MONTPELIER, IDAHO—Exploration work conducted by San Francisco Chemical Co. for Stauffer Chemical Co. at the latter's Hot Springs, Idaho, phosphate rock property has indicated a multi-million ton ore body.

The Stauffer reserves include at least a million tons of easily minable, high grade phosphate rock which can be used for the economic manufacture of superphosphates.

PSP three-fold increase

MAYWOOD, CALIF.—A three-fold increase in over-all manufacturing facilities was effected recently when PSP Engineering Co., a division of Induction Motors Corp., moved to its large new plant at 6058 Walker Ave. PSP manufactures precision scientific products, including aircraft solenoids and precision rotating components.

Westinghouse to build missile systems

SUNNYVALE, CALIF.—Westinghouse Electric Corp. will design and manufacture experimental seagoing handling and launching systems for ballistic missiles.

The program will involve a series of experimental systems, leading ultimately to a submarine launching system for Polaris, the Navy's new intermediate (1500 mile) range missile. The Westinghouse activity will be centered in its Sunnyvale division. Work will be under the direction of Richard N. Parkin.

THEY'RE BUILDING THE WEST ...WITH KAISER STEEL



MCDONOUGH STEEL, Oakland, does general steel fabrication for customers all over the world. The 185,000 gallon McDonough swimming pool at Oroville, Calif., (above) is the West's largest all-steel pool, fabricated with nearly 70 tons of Kaiser Steel plate.



BOWERS MANUFACTURING, Los Angeles, is the West's largest manufacturer of electric outlet and switch boxes. A user of large quantities of Kaiser Steel coiled sheet, Bowers has been in business in Los Angeles for over 36 years.

THESE COMPANIES are playing an important role in the vigorous growth of the West. They are among the hundreds of manufacturers, fabricators and distributors who rely on Kaiser Steel's close-at-hand supply of diversified steel products. To serve these growing western industries, Kaiser Steel is going forward with the largest expansion in its history to place in operation more new steel capacity than was built into the original Fontana plant during the entire war period, 1942-45.

Kaiser Steel
built to serve the growing West

Steel Mill Products: plates • hot rolled strip and sheet • cold rolled strip and sheet • tin plates • continuous weld pipe • electric weld pipe • alloy and carbon bars • bar shapes • structural shapes • semi-finished steels • pig iron • ingot molds • coke by-products • Fabricating Division: steel fabrication for construction, aircraft, missile and other industries • expanded fusion weld pipe • reinforced concrete pipe • tanks • For specifications, write: KAISER STEEL CORPORATION • Los Angeles • Oakland • Seattle • Portland • Phoenix • Denver • Tulsa • New York

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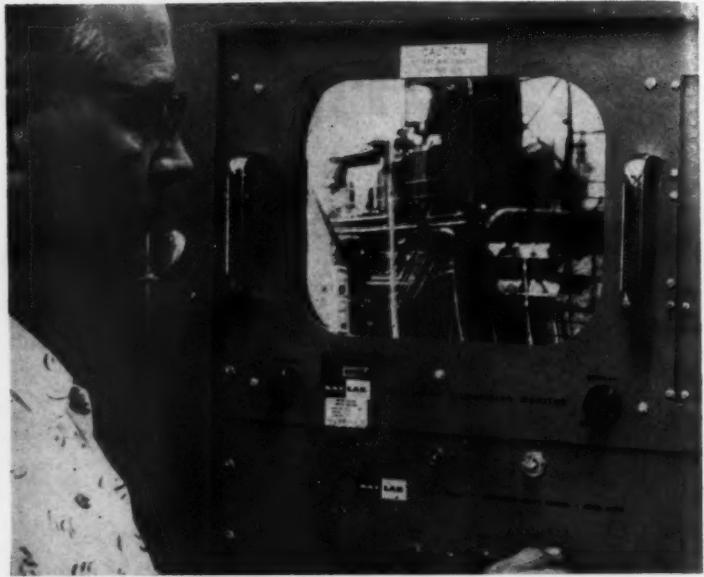
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Monitoring rocket test firings



TELEVISION is used to observe rocket engine test firings at Rocketdyne's (a division of North American Aviation, Inc.) propulsion field laboratory in California's Santa Susana mountains. Camera, by remote switch controls, can be panned, focused, zoom and iris controlled from within engine test control centers.

New Boeing facility

SEATTLE—Boeing Airplane Co. will construct a production plant facility in the Corps of Engineers Warehouse No. 2. Cost of the project will be approximately \$950,000.

Oregon releases wood waste study

PORTRLAND, ORE.—The Oregon Development Commission has released a study of a program for expansion of Oregon forest industries through development of wood residue utilization.

The report pinpoints areas best for

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composition board industries and
pulp and paper industries. Estimated
employment in these new industries
would top 3,000 persons.

Portage Double Quick opens Western office, warehouse

COMPTON, CALIF.—Portage Double Quick, Inc., has opened a Western office and warehouse at 529 Rosecrans Ave.

The new office will carry a complete inventory of PDQ Quick Change tools for milling machines, and turret lathes; carbide cut-off tools for turret lathes and automatics; carbide face mills; micrometer adjustable boring bars; groove checking gages, tool bits and cartridges.

David W. Puckett has been named
Western division manager.

Modernair expands

SAN LEANDRO, CALIF.—Modernair Corp. has completed its expanded production, engineering and administrative office facilities at 400 Preda St. An increase of 25% in plant production area has resulted from shifting engineering and production control offices to the new building, and by erecting a 30-ft. addition to the original plant, where Modernair's line of air and hydraulic cylinders, control valves and other fluid power components is manufactured.

Solar names Allied expansion joint distributor

SAN DIEGO — Solar Aircraft Co. has named Allied Supply Co., South Gate, as the distributor of Sola-Flex industrial expansion joints for the 10 southernmost California counties and parts of Arizona. Allied offices are at 4240 Santa Ana St., South Gate.

Solar manufactures the most comprehensive line of industrial expansion joints in the world. The joints are used in applications where temperature, pressure, expansion, axial and angular movement and vibration present difficult piping problems.

Ratigan Electronics expansion

GLendale, Calif. — Leo T. Ratigan, president, Ratigan Electronics, Inc., announces a 15,000-sq. ft. expansion of his firm at 425 W. Cypress St. Completion is scheduled in September. Ratigan Electronics manufactures electronic components.

Applied Research addition

GLendale, Calif. — To consolidate facilities under one roof, Applied Research, 3717 Park Place, is adding a 37,000-sq. ft. facility, announces M. F. Hasler, president. Applied Research produces spectrochemical instruments and systems design.

Lee Deane move

NORWALK, CALIF.—Lee Deane Products, Inc., 15511 S. Carmenita Rd., will move to this new address in September. The new facility contains 12,000 sq. ft., reports J. Linn Rodgers, president. Lee Deane provides thermo-setting plastic molding and is a tool and die shop.

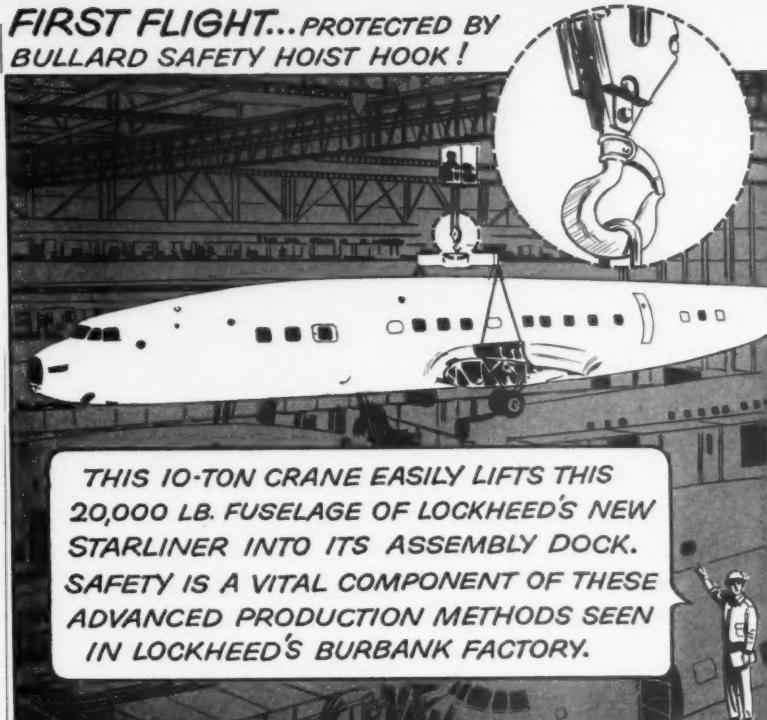
Schroeder Mfg. new plant

SAN PEDRO, CALIF. — Some time this September, Schroeder Mfg. will move to a new \$200,000 plant in the Dominguez tract. Presently located in Long Beach, the firm manufactures hot-air and fuel valves for the aircraft industry. O. J. Schroeder is president.

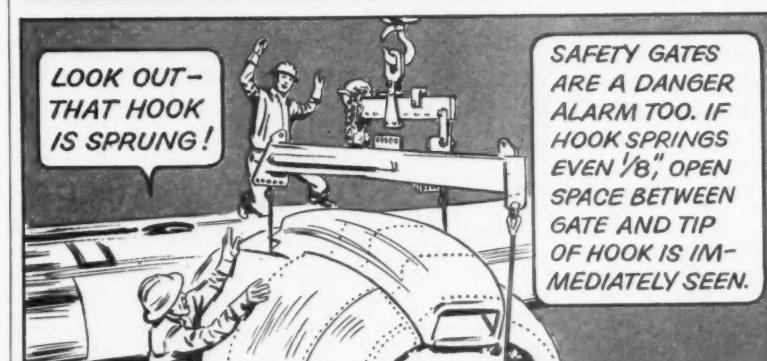
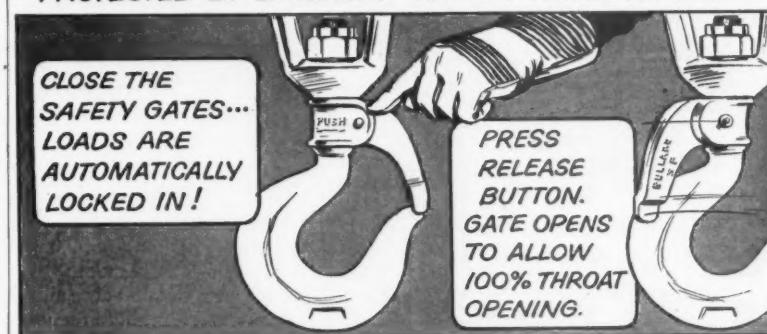
Wiley-Bayley, Inc., warehouse

SPOKANE, WASH.—Wiley-Bayley, Inc., of Seattle, has opened a new warehouse at East 41 Gray St. *Welles R. Wiley*, president of the firm, said that the new facility would be used to supply *Styrofoam*, a Dow Chemical Co. plastic foam, to users in the Spokane area. *Styrofoam* is widely used for low temperature insulation and for roof, perimeter and plaster base insulation in light construction.

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Industry to benefit by S.S.F. seaport

SOUTH SAN FRANCISCO—Preliminary steps have been taken to create a deep-water seaport here.

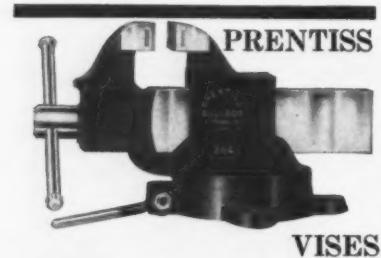
An application has been filed with the Army Corps of Engineers to realign the northern bulkhead line along the San Bruno canal (increasing by some 80 acres the land available to industry adjacent to the port area) to create an 850-ft. wide turning basin and construct dock and warehouse facilities on city-controlled submerged lands.

Tentative plans call for a dock capable of handling four large seagoing merchant ships.

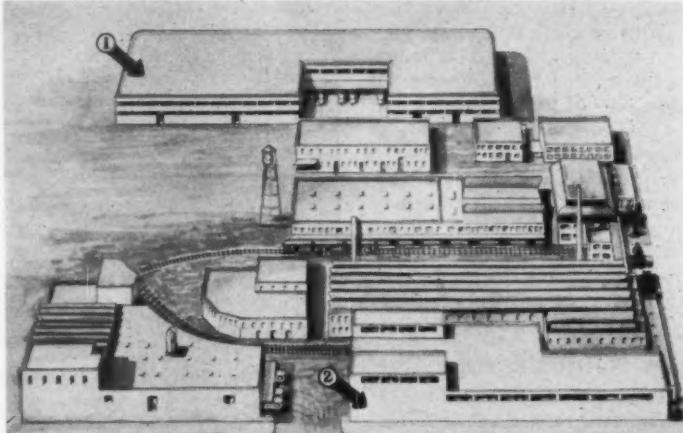
International Harvester plans Stockton branch

STOCKTON, CALIF.—The International Harvester Co. motor truck division has leased approximately 30,000 sq. ft. of the Al LaBrucherie plant located at 1747 East Charter Way for a new branch truck sales, parts and service agency.

J. H. Adams is manager.



Largest container plant in the West



AMERICAN CAN COMPANY EXPANSION in Vernon, Calif. (4815 Santa Fe Ave.) is shown in the aerial view sketch above. When the integrated plant is completed in 1957, it will be the West's largest in the container industry, and one of the six largest in the world. It will cover approximately 940,000 sq. ft. Figure (1) is a 200,000-sq. ft. warehouse and Figure (2) a 90,000-sq. ft. processing center.

Linde increases production at Fontana facility

FONTANA, CALIF.—Linde Company, division of Union Carbide Corp., is conducting a major expansion at its gas producing plant. Due to go into production early in 1958, the new unit will increase the initial high-purity gaseous oxygen output of the installation to 180 tons per day.

Eventually, the oxygen producing capacity of the plant will be increased to 430 tons per day. This is equal to roughly 9.5 million cubic feet per day of gaseous oxygen. All of the oxygen produced by this new unit will be delivered as a high-purity gas, according to Linde officials.

Rohr Aircraft opens Auburn facility

AUBURN, WASH.—A new \$500,000 facility was opened last month by Rohr Aircraft Corp. on a 50-acre site. The new facility will be used to reduce shipping costs and accelerate final assembly and delivery of KC-135 and 707 power packages for Boeing's Transport division at nearby Renton.

Jack C. Thompson is the Auburn plant manager.

Post Co. new facility

LOS ANGELES—The Frederick Post Co. will triple its former area with the completion of a new manufacturing facility near the Santa Ana Freeway and Vail Ave.

New Oregon concrete plant

PORTLAND—Empire Pre-Stressed Concrete of Oregon has built a new \$150,000 batching plant and pre-stressing bed at 9255 N.E. Halsey St.

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For sifting starch, cocoa, abrasives, dry colors, drugs, wheat, corn, cork, sugar, and many others. Both machines made four, six or eight sieves deep for various capacities and separations. Materials sifted can be cleaned, aerated and fluffed. Motors used are absolutely dustproof.

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Western firm marches East

LOS ANGELES—Sunbeam Lighting Co. is moving East. *Herbert L. Krieger*, president of the Western lighting equipment firm, revealed that his company has acquired the 4½-acre Reynolds Metal Co. plant at Gary, Ind.

The new plant will manufacture and market to the 37 Eastern states, utilizing Sunbeam Lighting's established network of area distributor organizations. The full lines of Visionaire products, heretofore manufactured at the Los Angeles main-plant facility, will also be fabricated at the new plant.

Northwest aluminum plant

SEATTLE — The Benada division of Textron, Inc., has leased a building at 2920 First Ave. S., where it intends to establish a fabricating plant and warehouse for building aluminum products. The plant, the firm's first branch factory in the Pacific Northwest, will be under the direction of *George Otis*.

\$1,000,000 paper warehouse

PORLTAND, ORE. — Blake, Moffitt & Towne is building a new \$1,000,000 paper distribution warehouse at N.E. 55th and Hassalo. The building will contain 125,000 sq. ft. of floor space.

Fouch Electric Mfg. plant

PORLTAND, ORE.—Fouch Electric Manufacturing Co will build a new \$125,000 plant at N. Mississippi and Stanton Ave. The 100 by 170 ft. structure will provide the company with additional manufacturing facilities.

U. S. Plywood plans new Washington plant

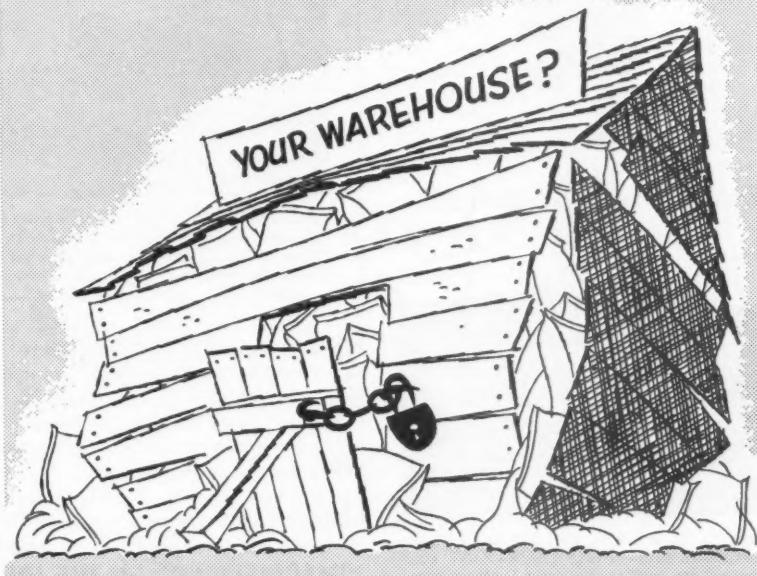
ROSEBURG, WASH.—The United States Plywood Corp. is developing plans for construction of a plywood plant, according to *George French*, manager of the company's Roseburg division. Construction is expected to get under way this year.

The plant will employ about 250 men and will produce about 4½ million sq. ft. of plywood a month. U. S. Plywood will handle construction, awarding subcontracts for various units of the project.

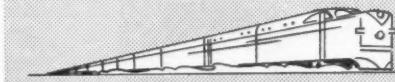
Monrovia pottery facility

MONROVIA, CALIF. — Hagen-Renaker Potteries plans to construct a \$150,000 factory and office building at 1810 S. Shamrock Ave. The building will have a total floor space of 38,372 sq. ft.

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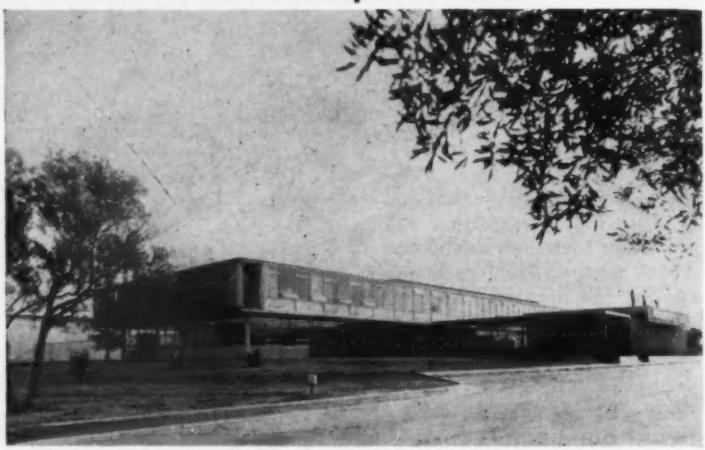
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New research and development center



HAILED AS THE "West's most advanced research and development center" is this building dedicated recently in Santa Barbara by the Aerophysics Development Corp., Santa Barbara, Calif., a subsidiary of Curtiss-Wright Corp. The center will be used to develop tomorrow's defense and commercial products.

New F. Somers Peterson line

SAN FRANCISCO—F. Somers Peterson Co., 157 Thirteenth St., and 1501 Maple Ave., Los Angeles, has been appointed manufacturer's representatives for John Hassall, Inc., Westbury, Long Island, N. Y. Hassall manufactures fasteners and parts.

Electric steel casting firm opens Bay Area offices

SAN LEANDRO—Thys Company, Northern California manufacturer of electric steel castings, has opened new sales and engineering offices at 414 Hester St., San Leandro.

In addition to its foundry facilities, Thys Co. also offers complete fabricating, machining and engineering services. Julius P. Bauman is general manager of the Sacramento headquarters and plant and Thierry Thys is director of sales in the new Bay Area offices.

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Power, when properly directed saves effort and time. And time is money today! The power of imagination is for Dalzell Rigging a staple of rigging success.

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New firm sells irradiation service

WALNUT CREEK, CALIF.—Applied Radiation Corp., 2404 North Main St., recently opened its Western irradiation center where industrial and academic organizations interested in radiation processing can use one of Applied Radiation's linear electron accelerators on a rental basis.

The center's 10,000,000 electron volt accelerator is the highest energy industrial accelerator operating in the United States. Research in radiation chemistry, radiation preservation of foods and drugs, and solid state physics is already under way.

Automatic Switch distributor

PORTLAND, ORE.—Automatic Switch Co. has appointed Western Machinery Co., 1035 Southeast Ninth Ave., as authorized stocking distributor of Asco solenoid valves.

New Republic Supply line

SAN LEANDRO, CALIF.—The Republic Supply Co. of California, 1919 Williams St., has been appointed exclusive stocking distributor for Hills-McCanna Co., Chicago, manufacturer of diaphragm valves. Republic Supply will serve Northern California and western Nevada.

Gaylord Container move

LOS ANGELES—Gaylord Container Corp., division of Crown Zellerbach Corp., announces the move of its Southern California office to new and larger quarters at 230 West 30th St., Los Angeles.

Blakemore Equipment building

WEST SACRAMENTO, CALIF.—Blakemore Equipment Co., representing LeTourneau-Westinghouse Co., J. I. Case Co. and Worthington Compressor Products, has purchased property and will erect a \$40,000 building.

Arwood Casting acquires two casting firms

NORTH HOLLYWOOD, CALIF.—Arwood Precision Casting Corp., 321 W. 44th St., N. Y., has purchased Duncan-Rohne Co., producer of non-ferrous investment castings, and Malco Metal Products Co. specializing in machining of castings. Both companies will continue to operate in present locations as subsidiaries of Arwood.

Arwood's present Western operations include a production plant for steel investment castings, a sales organization and engineering staff.

Crane Hoist plant

SAN LEANDRO, CALIF.—Crane Hoist Engineering and Manufacturing Corp., now located in Emeryville, has purchased a one-acre site in the McGuire-Hester tract and plans to erect a 12,500-sq. ft. building for the manufacture of overhead traveling bridge cranes used in monorail systems.

American Blower expansion

SAN LEANDRO, CALIF.—American Blower division of American Radiator and Standard Sanitary Corp. is constructing a 32,000-sq. ft. plant addi-

tion at 1900 First Ave. Raymond A. Lee is local manager.

Research Instrument moves

PORLTAND, ORE.—The Research Instrument Co. has moved to new and larger quarters, located at 7962 S.E. Powell Blvd. The new facilities provide an increase in working area of 400%, including space for additional expansion. The firm manufactures Verni-Pot vernier potentiometers. Plans call for continued expansion as new models and components are introduced to the field.



PUMPS FOR INDUSTRY



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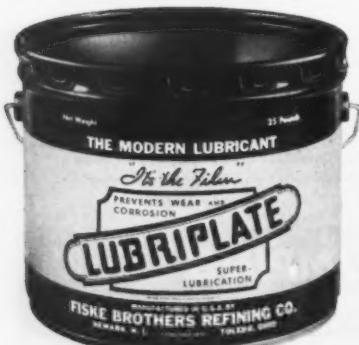
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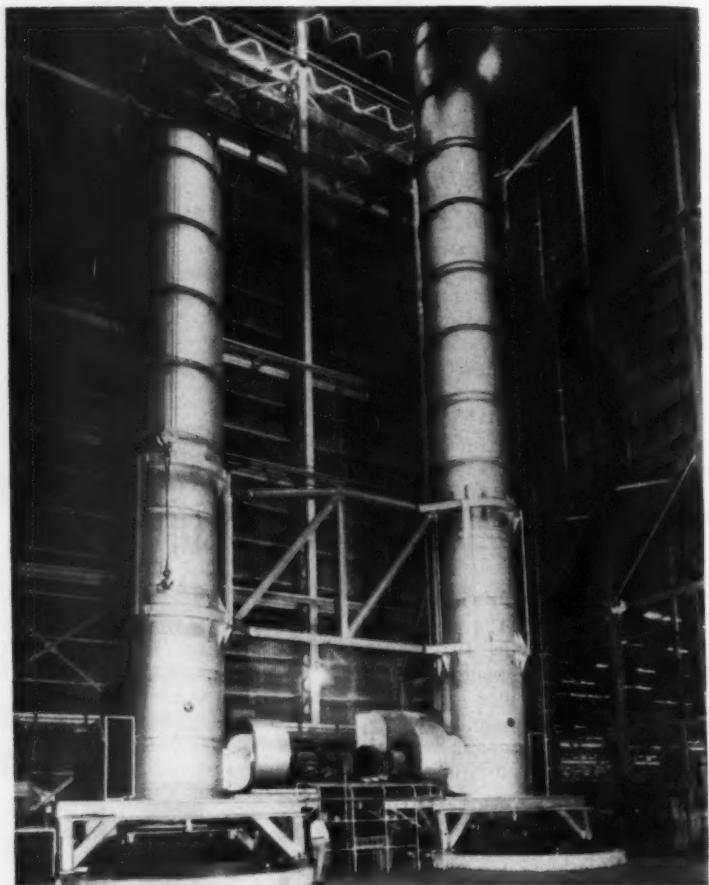
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... for more details, circle No. 91

104

Electric furnace tops 10 stories



REACHING HIGHER THAN 10 STORIES, the electric furnace above (right) heat treats giant aluminum alloy shapes for aircraft, construction and other uses. Built by Westinghouse for the Harvey Aluminum plant in Torrance, Calif., this furnace and its 70-ft. high companion (left) provide controlled temperatures which multiply several times the strength of the metal.

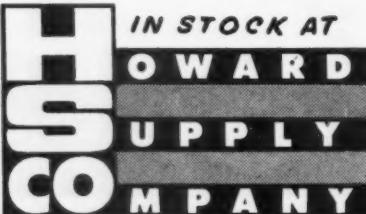
Chemtrol doubles production

COMPTON, CALIF.—Chemtrol Corp. will double its production capacity by a recent move into a new plant at 1417 W. El Segundo Blvd. The company designs and manufactures corrosion service plastic valves.

PLUMB



HAMMERS



... for more details, circle No. 92

**Potters Brothers
builds new plant**

ANAHEIM, CALIF.—A new plant for the manufacture of glass reflective spheres has recently been completed by Potters Brothers—California, Inc., at 1255 South Lewis St.

The glass spheres produced by the company are extensively used for reflective highway markings, reflective signs, reflective paints, and many other uses.

Old Colony Paint expansion

LOS ANGELES — A new, 9,000-sq. ft. warehouse is under construction for Old Colony Paint & Chemical Co. at the main office and factory, 620 Lamar St. The warehouse is part of an expansion program which calls for a new office building and increased research and development facilities. Plans call for more modern and efficient stock handling and a 75% increase in dock loading facilities.

American Potash & Chemical technical service

LOS ANGELES—American Potash & Chemical Corp. has established a technical sales services section to act as a coordinating unit among the company's production, market development and sales departments.

Daniel A. Lundy, formerly Western sales supervisor of boron and lithium products, will be Western manager of the new section. He will operate from the company's Los Angeles office. A key function of the section will be in connection with the transfer of new products from AP&CC's market development department to the sales department.

Paxton Products moves to new quarters

SANTA MONICA, CALIF.—Paxton Products of Los Angeles, a subsidiary of McCulloch Motors Corp., has moved to a new 16,000-sq. ft. facility at 929 Olympic Blvd.

John Thompson, Paxton's general manager, said that immediate plans call for doubling the staff. The firm builds supercharge kits for automobiles.

Harcraft Brass complete expansion

TORRANCE, CALIF.—An extensive expansion program has been completed by Harcraft Brass. New highly specialized facilities include electronic heavy duty plating equipment, an analytical control laboratory, and increased warehouse space.

Harcraft manufactures and markets a complete line of plumbers' brass goods, fittings, stops and flexible supplies.

Globe S. F. office

SAN FRANCISCO—Globe Freight Service of Los Angeles has opened a branch office at 559 China Basin St.

CRESCENT



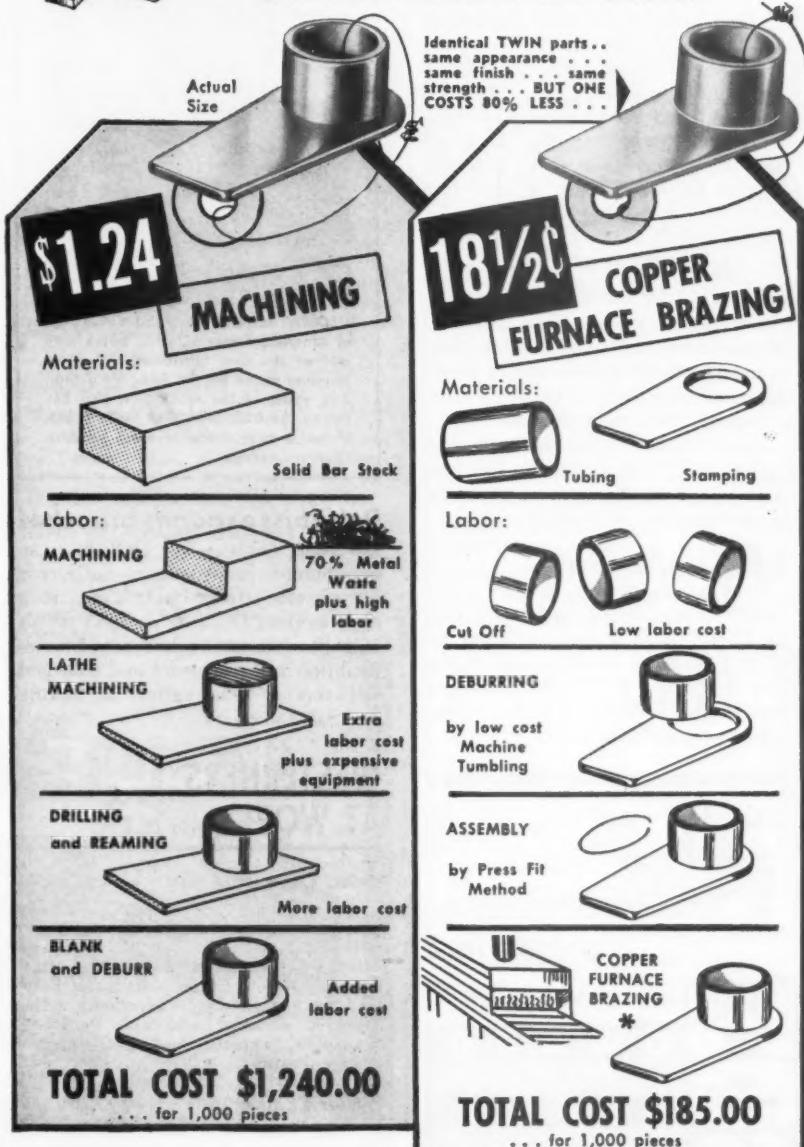
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WESTERN INDUSTRY — July 1957

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American Can expands Vernon facility

LOS ANGELES—The American Can Company is expanding its Vernon plant by adding approximately 290,000 sq. ft. of floor space. The expansion program, scheduled for completion by late 1957, will make the can manufacturing plant the largest of its kind in the West, in terms of floor area, and one of the largest can factories in the world.

The expansion project involves creation of two separate structures, one designed to provide additional warehouse area, the other to house new processing equipment which will convert 15,000-lb. coils of steel into standard can-making plate.

G. M. plans warehouse in Portland area

BEAVERTON, ORE.—The General Motors truck and coach division plans to construct a \$460,595 warehouse and office building on the Southern Pacific industrial tract in Beaverton.

Blueprints call for construction of a 452 x 122 ft. one-story building with 54,571 sq. ft. of floor space to be located on a lot 600 x 450 ft.

Bristol L.A. branch

LOS ANGELES—A branch factory and repair laboratory has been opened by the Bristol Co. of Waterbury, Conn., at 6800 East Acosta St. Manager of the new branch is J. W. Peckham, who has been Bristol's Western district manager for many years.

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 WESTERN INDUSTRY — July 1957

Worth more than \$100 a pound



GLORIA JENSEN of Fabri-Valve Co. of America, Portland, Ore., poses with one of the first fabricated valves of titanium made by the firm. More than 2½ years in the making, it cost between \$6,000 and \$10,000. Fabri-Valve is now ready to mass produce titanium valves.

DeVilbiss expands branches

SAN JOSE, CALIF.—The DeVilbiss Co. has moved its Northern California branch office from Santa Clara to a new, modern building at 1335 North 10th St., has established new branch facilities in Los Angeles and enlarged sales-service headquarters in Seattle and Salt Lake City.

WESTERNERS AT WORK . . .

Delco Chemicals, Inc.

... a subsidiary of Pennsalt Chemicals Corp., has established sales and warehouse facilities in Portland and D. L. (Bud) Hilton has been named district sales manager for Oregon. Hilton, a native of Portland, has had many years experience in the industrial chemical field with Delco—in automotive, aircraft, food packing and other industries.

Hyster Company

... names Robert F. Moody as domestic sales manager; Raymond L. Howerton, sales promotion manager, and Raymond M. Ronald, as domestic sales manager of tractor equipment sales.

Northrop builds "House of Test Magic"

HAWTHORNE, CALIF.—A "House of Test Magic" has been constructed for Northrop Aircraft, where freezing, burning, wetting, ultrasonic shock vibration, and other related conditions will be applied to vital defense products.

As a completely modern and fully equipped environmental testing laboratory, the building is designed to provide an indoor proving ground for the reliability of products used in advanced aircraft and guided missiles.

Consolidated name change

PASADENA, CALIF.—Consolidated Electrodynamics Corp. has changed the name of its Electronic Industries division to the Alectra division. Products of the division include portable test instruments, printed wiring, transistor circuitry and specialized electronic components. Division manager is George B. Clark.

Rheem building container plant

TACOMA, WASH.—Rheem Mfg. Co. has started construction on an 18,200-sq. ft. plant in the Port of Tacoma industrial area.

The plant will produce 30 and 55-gal. drums for petroleum, chemical and other processors in the Pacific Northwest.

U. S. Steel National Tube div.

... announces the appointments of William J. McKee as assistant vice president-sales, and Robert E. Williams as general



W. J. McKee

R. E. Williams

manager of sales. McKee began his business career with National Tube in 1912 and Williams started with the former Columbia Steel Co. in 1935.

Litton Industries

V. D. Carver

... names *Vinton D. Carver* as manager of the new plant to be constructed in Salt Lake City. Carver formerly was vice president and general manager of the Pacific division of Farnsworth Electronics Co., a division of IT&T.

Crown Zellerbach Corp.

... designates *James E. Lambert* as general superintendent, woodmill, finishing and services at Camas, Wash.

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Joyce-Cridland Co.

... appoints *E. P. Lordon* new Pacific Coast manager, with headquarters at 473 Lombard St., San Francisco. This marks the first time Joyce-Cridland Co. has opened Western facilities of any sort other than representation through dealers and distributors.

The Central Oregon Iron Works

... Bend, Ore., names *Marion E. Cady* as sales manager. Cady resigned recently as manager of the Bend Chamber of Commerce after serving in that capacity for six years.

Westinghouse Electric Corp.

H. E. Day

... appoints *Hugh E. Day* as manager of its new apparatus office at 129 S. 1st St., Arcadia, Calif. Day will oversee sales, engineering and service activities to customers in the San Gabriel Valley. Day joined Westinghouse in 1948.

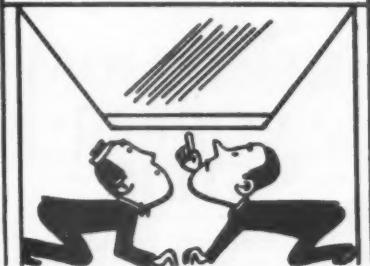
American Society of Mechanical Engineers

... elects *James N. Landis*, vice president of Bechtel Corp., as its new president. Landis was a past chairman of the San Francisco section of ASME.

Electrical Communications, Inc.

... names *Isaack "Ike" Herman* as general manager at its plant at 765 Clementina St., San Francisco. Herman will spearhead a vigorous expansion program launched by the firm.

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Utility Trailer Mfg. Co.



Walt Pavela
... of Los Angeles announces the appointment of Walt Pavela as general sales manager of the trailer building firm. A well-known figure in the transportation industry, Pavela takes over the job of assisting Utility distributors with fleet customers. He will act as liaison man between factory, distributors and fleet accounts.

DeWalt, Inc.

... a subsidiary of American Machine and Foundry Co., designates Robert A. Hummert, formerly Chicago district manager, as Seattle manager. The Seattle territory consists of the entire states of Washington and Oregon and the 11 northern counties of Idaho.

Jessop Steel Co.

... announces the appointment of Roger M. Freberg as assistant to the Pacific Coast manager, William W. Britton. Freberg was formerly employed by Ryerson and Crucible Steel Co., with three years' service in the West.

Precision Potentiometer division

... of General Controls Co., Glendale, Calif., names Max Moore as chief engineer. Moore was formerly project engineer at Spectrol Corp. before joining General Controls last year as project engineer on precision potentiometers.

Stauffer Chemical Co.

... appoints Robert P. Obrecht as director of the Richmond, Calif., research laboratory. He will be in charge of all research and development activities at that location. Obrecht has spent more than 15 years in industrial chemical research and production.

American Potash & Chemical Corp.

... names Modesto L. Leonardi as manager of plant production at its Torrance plant. Leonardi has been with the company since 1939. A. J. Anderson, formerly manager of plant production, has been appointed advisory engineer for the Trona facility.

Aaron Machinery Co.

... will open a new branch at 1116 West Washington Blvd., Los Angeles. Manager of the new branch will be Ed Shapiro, a former manufacturer's representative who has been associated with Aaron since the Western division was established. The company also opened a Northern California branch in Richmond, with Arnold Wexler as manager.

Kaiser Gypsum Co., Inc.

... appoints Warren R. French as gypsum products manager. French will supervise gypsum products sales from the San Francisco Bay region south to Bakersfield. French joined Kaiser Gypsum in 1953 and has been contractor sales representative in Alameda and Contra Costa counties during the past year.

Food Machinery and Chemical Corp.

... names George E. Ferguson as manager of the company's John Bean Western division in San Jose, Calif. The division produces a complete line of power sprayers and other spraying equipment. Ferguson has been with the John Bean operation since 1952.

Dole Hawaiian Pineapple Co.

... appoints David E. Stine manager of its can plant in Honolulu, T. H. He will direct the company's new can-making facility which produces nearly 400 million cans annually for Dole pineapple products. Stine is former general manager of Continental Can Co. in Mexico.

Hugh Carter Engineering Co.

... is a new consulting engineering organization, headed by Hugh C. Carter, former senior engineer for the Los Angeles firm of Pereira and Luckman. Carter's new firm will be located at 222 Atlantic Ave., Long Beach, Calif.

B.B.C. Welding & Engineering

... 4040 Del Rey Ave., Venice, Calif., is expanding its precision welding facilities for subcontracting, portable welding, and fast overload job services, according to Glen S. Wilson and Joe Poletti, owners.

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WESTERN INDUSTRY — July 1957

how to sell the West's manufacturing industries

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Allis-Chalmers Mfg. Co.



N. E. Croft

... appoints *Norton E. Croft* as Pacific regional representative to industries using processing machinery department products. His headquarters will be in San Francisco. *W. F. Hackett* has been named supervisor of crushing machinery sales, succeeding Croft.

C. W. Warren has been appointed

... exclusive Southern California representative for the Philadelphia Nail & Wire Co., Inc. This company manufactures to customer specification nails made from any type of metal. Warren has also been appointed distributor for the Gaess Manufacturing Co., Inc. Headquarters of this firm are in Waterbury, Conn., and it manufactures rivets to consumer specifications.

Kennecott Copper Corp.

... Nevada Mines Division, designates *W. K. Sanders* as maintenance superintendent at McGill and *Rush Muse* as maintenance superintendent at Ruth. The appointments followed a reorganization of the maintenance department at the two mines.

Robert Edgecumbe & Associates



R. Edgecumbe

... is a new industrial engineering consulting firm located at 350 So. Fuller Ave., Los Angeles. The firm will concentrate on basic industrial engineering applications including work methods, measurement, incentives, predetermined data, etc. Edgecumbe is former chief industrial engineer at Virtue Bros. Mfg. Co., Los Angeles.

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Wyle Manufacturing Corp.

... of El Segundo, Calif., appoints *Davis Hutchinson* as chief engineer in charge of design, production and distribution of the "Hydrashaker," new hydraulically powered vibration excitation system now in production. Previously, Hutchinson was senior project engineer with Century Engineers where he designed large vibration machines, and environmental test facility systems.

Western pine report

PORLAND, ORE.—The Western Pine Association reports that the year to date (week ending May 18) orders are 91% as great as the same period of 1956; shipments are 92% and production 93%.

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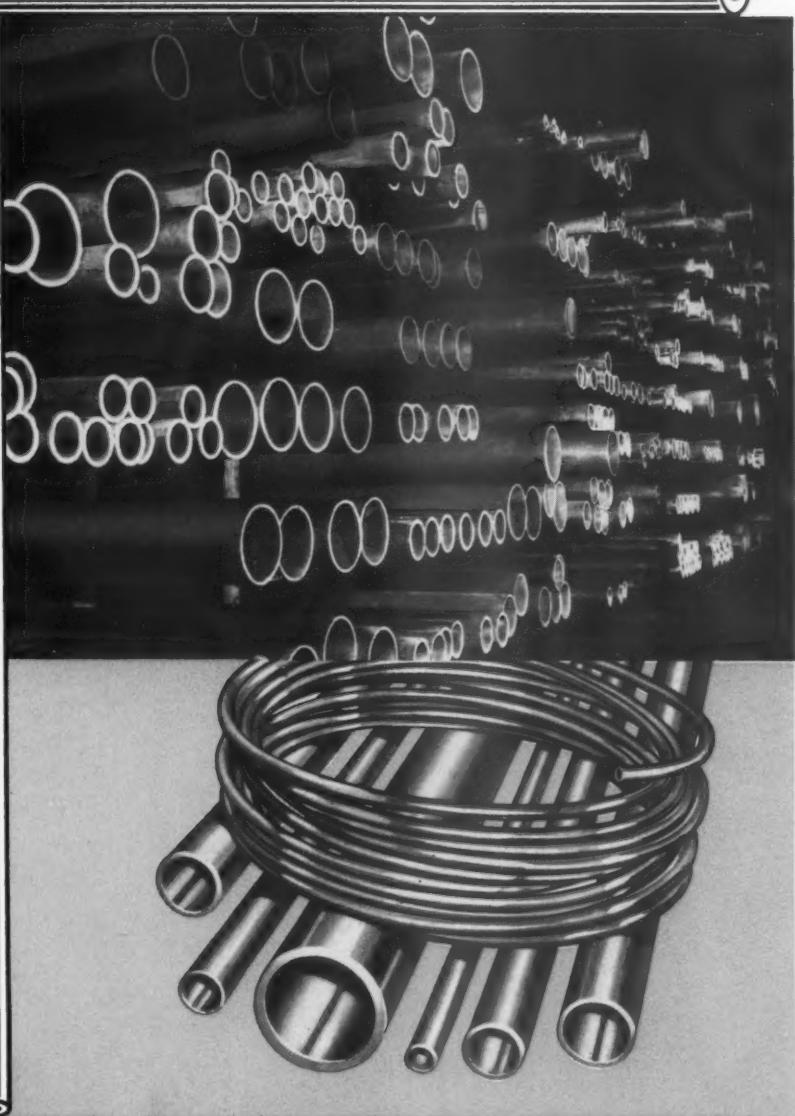
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Type 302
Type 321 and 347
Armco 17-7 PH
Type 430

ARMCO STAINLESS SHEET

Type 301
Type 302 and 304
Type 304L, 310 and 316
Type 316L and 321
Type 347
Armco 17-7 PH

ARMCO STAINLESS PLATE

Type 304
Type 316
Type 321 and Type 347
Armco 17-7 PH

ARMCO STAINLESS BAR

Type 303 FM Sulphur
Type 303 FM Selenium
Type 304
Type 316 and 321
Type 347
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Type 410
Type 416
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